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THE
SIERRA CLUB BULLETIN

Volume VI

1907 — 1908

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All communications intended for publication by the SIERRA CLUB, and all correspondence concerning such publication, should be addressed to the Editor, Elliott McAllister, 704 Union Trust Building, San Francisco, California.

Correspondence concerning the distribution and sale of the publications of the Club, and concerning its business generally, should be addressed to the Secretary of the Sierra Club, Room 316, Third Floor, Mills Building, San Francisco, California.

SIERRA CLUB PARTY DESCENDING MT. RAINIER.

From photograph by E. T. Parsons, 1905.

SIERRA CLUB BULLETIN.

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THE SIERRA CLUB'S ASCENT OF MT. RAINIER.*

By Evelyn Marianne Ratcliff.

Every year the Sierra Club gives the lover of natural scenery an opportunity to gratify his taste. From the Club's camp in Paradise Valley I had my first experience of a formidable mountain climb. Pitched on the slope of Mt. Rainier at an altitude of about 5,500 feet,—almost at timber-line,—it was within a few moments' reach of the Nisqually Glacier, which at that point is a mass of begrimed ice and nevé, furrowed crosswise with crevasses and lengthwise with moraines as far as eye can see. Beyond Paradise Valley looms the Tatoosh Range, a beautiful little series of summits, half-covered with a resplendent mantle of snow when we saw it. Indeed, its attractions were found so irresistible that we decided to climb its highest peak soon after establishing our main camp. A most perfect day's outing it proved to be; enough snow to make us realize its height and enough rock-work to add the spice of danger to the climb.† The summit of Pinnacle Peak afforded a magnificent view of Mt. Rainier, whose lofty white cone flung a challenge to us across the valley. From our cloud perch we scanned the great mountain narrowly, for its conquest was to be our main effort, and our respect for its height grew as we looked.

The start was made on July 24th, a day when the peak was wearing not a vestige of the cloud-cap that is the usual warning for storms. Fifty-three persons, headed by Mr. Parsons, lined up in camp and were formed into five companies, each with its own leader. There were also the scientists who under Mr. McAdie's guidance were to measure the height of the mountain. A goodly array of mountaineers we were,—a greater number than had ever before attempted the ascent, and greater probably than ever will again. The mountain is not without dangers, and as the risk was increased by the size of the party it was owing only to the great vigilance of the leaders that our safety was secured. An afternoon's struggle in the snow was our first day's programme. To our left stretched the Nisqually Glacier, growing whiter and more picturesque as we climbed higher and higher. Every now and then an avalanche came hurtling down on the glacier. As we stopped from time to time for breath, we had leisure to watch the great white field, and were delighted if we caught sight of the falling mass before its boom reached our ears. What an awe-inspiring sight it is to see a thunderbolt of ice and snow flash down a mountain-side! At one time a flock of mountain goats came into view, and we observed them as closely as the distance would allow. We now began to reach altitudes from which it was possible to appreciate more fully the greatness of the glacier, and to understand how the crevasses came to be formed by the uneven motion of the ice-stream down the sloping channel. About a thousand feet below Camp Muir the pack-train unloaded its freight, and we all carried our sleeping-bags, the men carrying also the commissary supplies. On reaching the camp, a rocky slope surrounded by snow, at an altitude of about 10,000 feet, our first task was to move the boulders into places where they would interfere as little as possible with the coming night's sleep. Unfortunately the little remained a good deal in spite of our best efforts. But I was fortunate enough to secure a place surrounded by a kind of rock wall, so that there was no danger of being chilled by

---

* For a narrative of the entire outing see the Report of the Outing Committee, page 50, *infra*.

† See the article, "Sky-Line of the Tatoosh Range," in this number.

ORGANIZING FOR CLIMB OF MT. RAINIER.
RESTING ON CLIMB—OVERLOOKING NISQUALLY GLACIER.
From photographs by E. T. Parsons, 1905.

the wind. It was then shortly after 6 o'clock, and as the sun disappeared behind the rocks the snow became quite hard and crisp—evidence that the frost had already set in. Against the cold we were prepared, for we had been informed that this would be the severest of our hardships during the climb. But as it grew colder and colder I began to think with some misgiving of my ten-pound sleeping-bag, which consisted merely of an eiderdown quilt covered with denim and a thin oil-silk water-proof bag. This misgiving proved groundless, however, for I slept away the night perfectly warm in my sequestered nook. Judging by the cheerful countenances seen the next morning, the rest of the party also suffered no hardship.

At supper-time, while waiting for hot soup, tea, and beans,—a truly sumptuous meal to be cooked on a Khotal stove* and served amid such surroundings,—we had ample time to enjoy the magnificent view. The eye was first attracted by three snow-peaks standing out clearly in the distance, with the sunset glow illuminating them in a most wonderful way. There was Hood, a mountain of perfect conical form, flanked on either side by St. Helens and Adams. Almost at our very feet lay the Tatoosh Range, the scene of our conquest a few days before. How utterly insignificant it now looked! Our eyes unconsciously wandered back to the three imposing peaks, and a sense of exhilaration took possession of us as we reflected that we were about to conquer a greater than any of these.

With the moon still high in the heavens, we rose, breakfasted, and, as dawn slowly appeared, began the ascent. From now on it was hard work. The climbing of Rainier is not a holiday jaunt. As far as Gibraltar Rock it was a constant alternation between rock and snow climbing, in the former our main care being to avoid dislodging rocks, and in the latter to choose our footholds so as to keep from slipping. On the rocks it was at times necessary for two or three persons only to proceed simultaneously, in order to avoid as much as possible the danger of precipitating rocks upon the heads of people below. There were places on the snow where a dexterous use of the alpenstock might have rendered a misstep harmless. But there were places also where the slope was so nearly vertical that no power on earth could have arrested a falling climber. At Gibraltar still greater obstacles confronted us. On the west side of the rock there was a narrow ledge from which a steep talus fell away, terminating abruptly over a precipice. This ledge had to be footed with great care, for a good part of it was covered with ice, and nothing could have saved the luckless person who had slipped there. In places of this kind one element of danger against which a mountaineer's skill is powerless consists in cannonades of rocks started by the action of the sun on frosted surfaces. Fortunately our early start obviated this danger in large measure. But we lost no time in passing this point. The end of the ledge led to a steep chute of glacial ice. Here the leader's ice-ax came into play, for every step had to be cut. Then a rope was passed up, and with the aid of that and our alpenstocks we reached the top of the slope safely. Not, however, without the utmost precautions, for here also a misstep would have been fatal. Arrived at the top of Gibraltar, we stopped to rest a moment in a nook sheltered from the chilling wind and suffused with the first rays of the rising sun. Presently another great snow-field was under our feet. Our progress now was slow and interrupted by frequent short halts to enable us to catch our breath. The effect of the altitude began to tell in the effort that had to be put forth at every step. Despite the warmth of the sun's rays, a strong westerly wind chilled us to the bone. Fortunately it acted as a spur also to our flagging energies, and we

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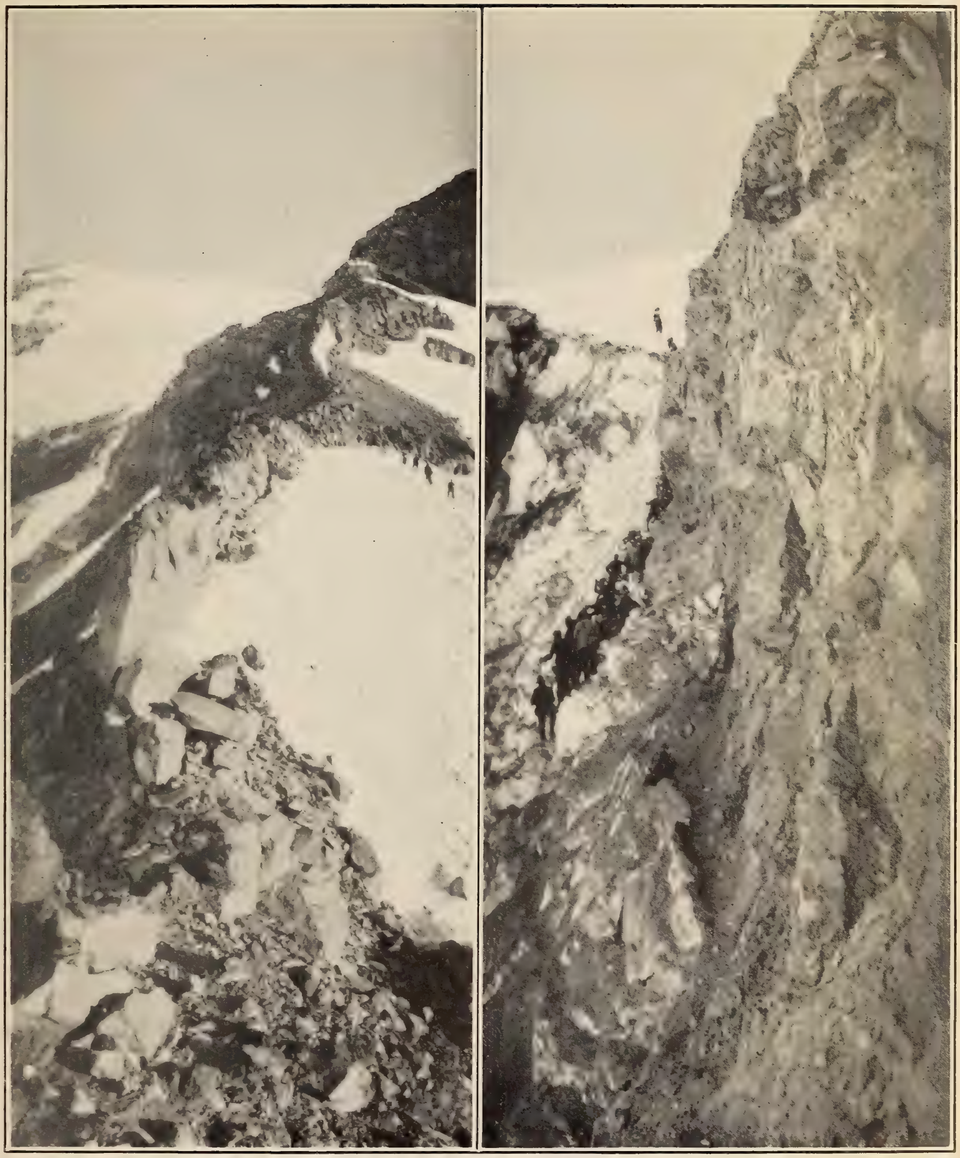
* It should interest mountaineers generally to know that two small single-burner Khotal oil-stoves, weighing only seven pounds each, an improvement on the Primus stove, cooked for the sixty-two people in camp that night a supper of soup, tea, and canned pork and beans, and breakfast the next morning, with a total consumption of less than one-half gallon of kerosene oil.



APPROACHING GIBRALTAR (SECOND DAY). PASSING GIBRALTAR.

From photographs by E. T. Parsons, 1905.

PARTY ON SNOW-FIELDS (FIRST DAY).

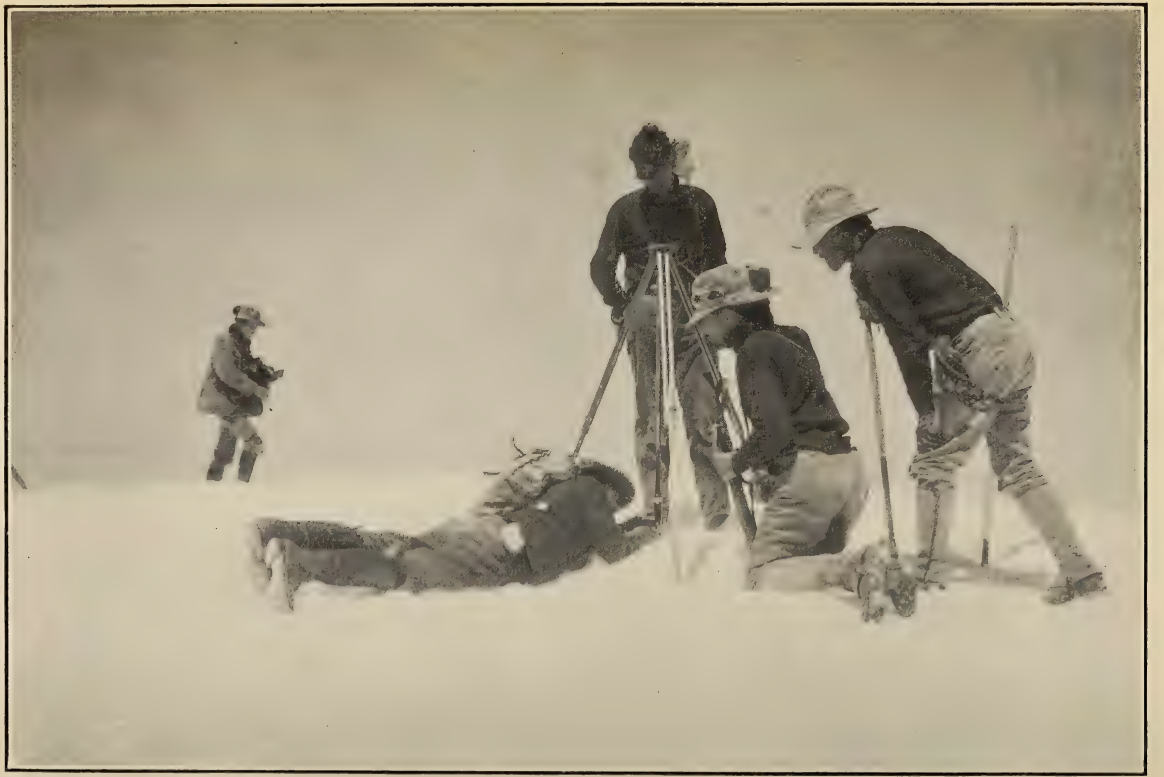
POINT OF ARRIVAL AT CRATER ON SUMMIT OF MT. RAINIER (SECOND DAY).

From photographs by E. T. Parsons, 1905.

tramped on steadily until a ridge of volcanic rock told us that we had reached the rim of the crater; for Rainier once upon a time was a great fire-mountain whose gleaming streams of incandescent lava and lofty pillar of ash-laden smoke must have made its summit a much more impressive sight than the silent white snow-fields that now choke its smoldering fires. Only a mountaineer can appreciate the sense of exhilaration with which we contemplated the vast expanse of the crater and told ourselves that we had conquered the kingliest among all the mountains of the United States.

It was then 9:30 A. M. The climb had occupied us only five hours from Camp Muir, a fact upon which we reflected with much satisfaction, since we had expected it to take at least seven. It was impossible to remain exposed long in the gale of wind that was sweeping the summit, so we sought shelter behind some rocks, and each made an onslaught on the lunch which a Sierran always carries in a bandana handkerchief tied to his belt. The leisurely disposition of the lunch was followed by a postprandial tour of investigation around the crater. Crossing half a mile of snow that filled the basin of the crater, we reached the highest point on the summit. Puget Sound, numerous valleys, and ranges of hills could be seen extending for miles from the mountain. But on the whole this view suffered by comparison with that which we had enjoyed the night before from Camp Muir. The height of the mountain is about 14,528 feet. The timber-line is reached at about 5,500 feet. This leaves a zone nearly two miles in width across which the eye has to travel without the aid of objects that usually furnish a sense of perspective. A slight haze also veiled the distance so that this part of the trip left some expectations unrealized. Smoke still issues from the crater in some places near the edge, and sulphurous gases are emitted in great quantities. But the mouth of the crater has been filled with snow, which forms an almost level field across the center.

The descent was begun about noon, and proved harder work than I at least had anticipated. No sliding could be attempted on account of crevasses in some places and the steepness of the snow-slope in others. Only a few weeks ago one of the guides had slipped on the snow not far from Camp Muir. Having dropped his ice-ax, he was unable to stop himself. He slid down the snowy slope until he came to a wide crevasse which he could not avoid, and consequently tried to jump. Unfortunately he struck the other side of the crevasse too low, and went down, breaking his legs as he fell. The character of the climbing at times was such that a similar or worse misadventure had to be reckoned among the possibilities; for a steep incline would be sure to end with a crevasse, a rock talus, or a precipice. Consequently we redoubled our precautions, planting our alpenstocks with care, and stepping with precision. Once more on the icy slope near Gibraltar we used the rope, and descended very slowly and cautiously. Arrived under the brow of the great cliff, we found it necessary to make all possible haste; for, seeing an immense boulder break off above and go thundering across our path, we realized the danger of our position. By keeping close to the wall it was possible to lessen somewhat the chances of being hit. Fortunately all passed the end of the ledge in safety. At Camp Muir a brief halt and a cup of tea restored our flagging energies. The worst was over. Not long thereafter we marched into camp with the grateful feeling of accomplished purpose and thrilling memories of a hardy pastime.



TAKING MEASUREMENTS FOR ALTITUDE ON SUMMIT OF MT. RAINIER.

From photograph by Asahel Curtis, 1905.

MT. RAINIER, MT. SHASTA, AND MT. WHITNEY AS SITES FOR METEOROLOGICAL OBSERVATORIES.

By Alexander G. McAdie.

In 1903 an ascent of Mt. Whitney was made by the writer, and a report upon its availability as a site for meteorological research published in the Sierra Club Bulletin, June, 1904. The elevation 14,515 feet, then determined barometrically, was thirteen feet higher than the value determined by precise levels in August, 1905, by the U. S. Geological Survey, Mr. R. A. Farmer, topographer.

During the present summer ascents of Mt. Rainier and Mt. Shasta were successfully made. Mercurial barometers, a boiling-point thermometer, wet- and dry-bulb thermometers, and other apparatus were carried to each summit. The barometers were the same as those used at Mt. Whitney. Check readings were made at San Francisco and at Portland; and simultaneous readings for sea-level conditions at Seattle, Tacoma, Portland, Spokane, Red Bluff, and Eureka, through the courtesy of the officials in charge of the Weather Bureau offices in those cities. Professor J. N. Le Conte,* of the University of California, checked the readings at both peaks; and Messrs. Franklin, Knapp, Hutchinson, Gardner, Gould, and Elston assisted.

Camp at an elevation of 5,500 feet was made in Paradise Valley on the southern slope of Mt. Rainier July 16th-31st. Leaving camp July 24th, the night was spent at Camp Muir, and on July 25th the ascent completed. Starting from Sisson, Mt. Shasta was climbed on August 4-5, 1905.

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* Professor Le Conte also checked the readings made on summit of Mt. Whitney in 1903.

The coordinates of the peaks are:—

Rainier	46° 51′ 5″ N.,	121° 45′ 28″ W.
Shasta	41° 24′ 28″ N.,	122° 11′ 49″ W.
Whitney	36° 34′ 33″ N.,	118° 17′ 32″ W.

The elevations are:—

Rainier	14,394 feet, approximately.
Shasta	14,200 feet, approximately.
Whitney	14,502 feet, true.

These peaks, it will be noted, are so located as to offer an ideal opportunity for studying weather conditions on the Pacific Coast. They stand like three sentinels in a stretch of seven hundred miles, at such distances from one another and so related to the orography of the coast that an almost unparalleled opportunity is afforded for obtaining a cross-section of the general storm tracks and prevailing wind direction at levels extending almost from the sea to a height of 4,420 meters (14,500 feet). A chain of high-level observatories is particularly desirable on the Pacific Coast, inasmuch as the general climatic conditions are essentially different from those of other sections of the country, being in fact materially modified by the proximity of the ocean and the extremely diversified topography of the coast. As stations for research and original investigation of problems connected with the physics of the atmosphere, these peaks are exceptionally well adapted. The most northern, Rainier, lies directly in the mean storm-track, and permits of experimentation upon cloudy condensation in the free air, rainfall, and snowfall throughout the entire gamut of pressure and temperature conditions. The most southern peak, Whitney, is located in a region probably the driest in the United States. With nearly half of the sensible atmosphere below its summit and a minimum amount of water-vapor present, no better site could be found for investigating the part played by the atmosphere in the absorption of solar energy. The discoveries made at all lower-level observatories, giving as they must results obtained after the passage of the radiant energy through a considerable stratum of atmosphere, can only be completely verified by comparison with the results obtained at levels approximately above the sensible atmosphere.

Again, in connection with the radio-activity of air, it is believed that conditions are very favorable for experiments on the ionization of the upper air strata and the part played by electrons as nuclei for condensation.

But chiefly in connection with the practical question of improving the forecasts over the western half of the country is it important that observatories should be established on these peaks. The Pacific Coast is essentially a region of marked climatic contrasts. Within short distances great differences are found. In other words, local climates are prevalent to a marked degree in this Western country, and there is little of the general uniformity of temperature and other conditions prevailing east of the one hundredth meridian. It is believed that dynamic compression of the air forced down mountain-sides and into long narrow valleys plays an important rôle in determining local climates.

"Foehn" or "Chinook" conditions must be studied from the vantage-ground of high-level stations. Perhaps the most destructive single condition in California (not excepting a severe frost, or an exceptionally severe storm) is the norther of the Great Valley, or the kindred wind known as the Santa Ana of the region south of the Sierra Madre. Handicapped as the forecaster is on the Pacific Coast by a paucity of reports from the west, it is all the more necessary to obtain reports in other ways. Mountain winds play no inconsiderable part in the meteorology of the coast. We have the action of the wind in its general easterly drift, the air circulation due to the procession of passing disturbances, and, more pronounced still, the localized wind-currents or forced draughts up and down the mountain-flanks and through the numerous valleys. It is well known that many stations located in valleys are now of doubtful service to the forecaster because the reports do not indicate true cyclonic wind movements.

It is of course no easy matter to erect, equip, and maintain mountain observatories, and while it might be possible to carry out the plan as outlined, it would probably be much better to place self-recording apparatus on the summits, properly exposed, and establish a series of camps at levels of five, eight, and twelve thousand feet.

ELEVATION OF MT. RAINIER.

Columbia Crest, summit of Mt. Rainier, July 25, 1905, 11 A. M. to 12 noon. Observers, J. N. L. and A. G. M. Mercurial barometers, Green standard No. 1664 and No. 1554; four readings, 17.614, 17.616, 17.630, 17.632 inches. Temperature, mean, 39° F. Mean pressure, corrected for temperature, instrumental error, and gravity, 17.663 inches. Mean temperature of air column, obtained from readings at summit and at sea-level, 50° F.

Sea-level reading, mean of Tacoma, Seattle, Portland, and Spokane, 29.960 inches.

$$h - h_0 = 56517 + 123.3\,\theta + .003\,h$$
$$\left(1 + 0.378\frac{e}{B}\right)\,(1 + .0026\cos 2\,\phi)\,\log\frac{B_0}{B}$$

which may be written

$$\log 29.960 = \log 17.663 + \frac{h - h_0}{56517 + (123.3 \times 50^\circ) + .003\,h}(1 - \beta)\,(1 - \gamma)$$

$$h = 62725 \times 0.229478 = 14{,}394 \text{ feet.}$$

The boiling-point as determined on the south rim of the crater, probably one hundred feet below the true summit, was 86°.4 C. (187°.4 F.). The equivalent pressure would be 17.960 inches. We shall probably not be greatly in error if we assume that the boiling-point on the summit is about 186°.8, and the equivalent pressure 17.73 inches. A sling psychrometer gave the following:—

Dry,	37°.0 F.	36°.4	36°.5	36°.5	37°.0	Mean, 36°.7
Wet,	32 .0	28 .0	25 .0	24 .2	25 .5	" 26 .9

The dew-point was approximately 10°, vapor tension 0.07 inch and $\frac{e}{B} = .0004$.

ELEVATION OF MT. SHASTA.

Summit of Mt. Shasta, August 5, 1905, 12 noon to 1:30 P. M.; six readings, 17.988, 17.990, 17.992, 17.977, 17.962, 17.980 inches. Mean pressure, corrected for temperature, instrumental error, and gravity, 17.993; mean temperature air column, 60° F. Sea-level readings, Eureka, San Francisco, 30.000 inches.

$$h = 63958 \times 0.222017 = 14{,}200 \text{ feet.}$$

The boiling-point at the summit was 86°.5 C. (187°.7 F.). Equivalent pressure, 18.080 inches.

The height of Shasta given on the Geological Survey sheet is 14,380 feet (intended for 14,389 feet); but this elevation was determined more than twenty years ago by combining the results obtained by vertical angles and mercurial barometers. In a letter dated August 24, 1905, the Acting Director of the Survey states that "doubt is thrown on the value from the fact that an exact elevation of the base station was not known, and the methods used would now be considered only approximate."

MISCELLANEOUS OBSERVATIONS.

The following table of boiling-points may be interesting. It should, however, be noted that a strong wind was blowing when the readings were made at Mt. Rainier on the south rim of the crater.

Whitney, 186°.47 F. (Hallock 1903).
Rainier, 187°.4 F. (crater readings).
  Estimated summit reading, 186°.8.
Shasta, 187°.7 F.
Muir's Camp, 194° F.
  Estimated height, 10,000 feet.
Paradise Valley, Sierra Camp, 202°.4 F.
  Estimated height 5,700 feet.
Horse Camp, Mt. Shasta, 198°.5 F.
  Estimated height, 7,900 feet.

Observations based upon pressure determinations are confessedly less exact than those made by vertical angles or by levels. It is fully recognized in the above determination that the mean temperature of the air column may be in error. If air were at perfect rest, which it seldom is, a mean value might be obtainable; but on both dates mentioned we observed a marked stratification of the air, and under such conditions temperature and humidity values are indeterminable. Above the level of 10,000 feet the drift of the air appeared to be entirely different from the drift of the lower level. The humidity values, in the opinion of the writer, cannot be properly obtained without a series of simultaneous readings at probably not less than five points in the air column.

HISTORICAL.

The first estimate of the height of Mt. Rainier was made by Captain George Vancouver on Saturday, May 26, 1792. He had named the "round snowy mountain" on Tuesday, May 8th, after his friend, Rear-Admiral Rainier. No one had a better right to stand sponsor. The names which he gave to the peaks, bays, channels, and islands of the North Pacific coast,—Hood and Baker, after Lord Hood and Admiral Baker; Puget Sound, after his first mate, Peter Puget; the Straits of Georgia and Queen Charlotte Sound, after king and queen,—have all been graciously accepted and remain unquestioned, save one, Mt. Rainier. In the city of Tacoma, the mountain is called Mt. Tacoma. Long before the city existed, Vancouver (first white man to see that section) wrote of the country round about: "The forest trees gradually decreased and the perpetual clothing of snow commenced, a horizontal line from north to south along the range of ragged mountains, from whose summit Mt. Rainier rose conspicuously and seemed as much elevated above them as they were above the sea."* At that time of the year the snow-line would be approximately seven thousand feet above sea-level. Hence Vancouver's estimate of double this height was not a bad one. Moreover, Vancouver first gave the coordinates of the mountain: latitude, 47° 3″ N., and longitude 238° 2″ (— 360°). There is also an excellent sketch of Mt. Rainier made by J. Sykes, May 17, 1792.

The heights of Mt. Rainier commonly given are: E. S. Ingraham, 14,524 feet; Geo. F. Hyde, U. S. Geological Survey, 1896, 14,519 feet; McClure, McAllister, 1897, 14,528 feet.

Not until a line of precise levels shall be run will the true height of this kingly mountain be determined, and it may be pointed out that even then snowfall may modify the figure slightly. Before the top of the mountain was blown off and the crater formed, the summit was probably fifteen hundred feet higher than Columbia Crest.

The Acting Director of the Geological Survey, under date of August 24, 1905, states that the best determination of the height of Mt. Rainier by one of the topographers in 1902 is 14,363 feet above mean sea-level. This value was obtained by means of vertical-angle foresights taken from triangulation stations thirteen to twenty-nine miles distant from Rainier. The elevations of these stations were well determined from spirit-level observations.

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* *A Voyage of Discovery Around the World.* 6 volumes. London, 1801.

Of all the measurements which have been made in connection with the height of Mt. Rainier, the one which possesses the most pathetic interest is that made by Professor Edgar McClure of the University of Oregon on July 27, 1897, at 4:30 P. M. A Green standard mercurial barometer, No. 1612, was successfully carried to the summit, and readings carefully made. The reading, corrected for instrumental error and temperature, was 17.708 inches; with an air temperature of 29° F. Returning from the summit, Professor McClure lost his life in the act of giving warning to others to avoid the peril of his position. His body and the barometer were subsequently recovered, and the results discussed by his colleague, Professor McAllister. McClure's work in this and other directions was of a high order of accuracy, and probably no one was better fitted to attempt the task which he set for himself. The value obtained, reduced according to present methods, gives an elevation of approximately 14,454 feet. This value is only sixty feet in excess of the value given above, determined by the writer on July 25, 1905,—namely, 14,394 feet.

TATOOSH RANGE ABOVE THE CLOUDS, FROM SIERRA CLUB CAMP, PARADISE VALLEY.

From photograph by E. T. Parsons, 1905.

THE SKY-LINE OF THE TATOOSH RANGE, MT. RAINIER NATIONAL PARK.

BY MARION RANDALL.

On the afternoon of the 16th of July nine of us Sierrans who have had many days of mountaineering together sat on the top of Pinnacle Peak and determined to our own satisfaction that that mountain did not deserve the honor accorded it of being the highest point of its chain, but that a little-considered, and, as far as we knew, absolutely unexplored, peak at the farther end of the range was the real summit. We thereupon christened it Unicorn Peak, for reasons sufficiently evident, and resolved that before many days should have passed we should climb it and attain the actual summit of the Tatoosh Range.

This little mountain chain, while rising only to the elevation of seven thousand feet, is extremely picturesque. Formed of a dark volcanic rock, and with its steep northern slopes deeply buried in snow, its abrupt, straight wall, running from east to west for some ten miles, presents difficulties that many a range twice its size cannot boast. We had watched it often from camp at sunset, when the long purple shadows were thrown across its rosy snow-fields, or with its black pinnacles breaking through the storm-clouds into the sunlight again, until we knew every crest and col by heart. So it was not difficult to map out our line of exploration.

We left camp, fifteen strong, after 8 o'clock on the morning of the 20th, crossed the low ridge above the commissary, and swung down the long, open slope to the Paradise River. Across the stream, where the woods grew closer, the ground was carpeted with soft mosses and banks of starry erythronium lilies. We climbed on, brushing through the dewy branches of the underwood, until, emerging in a little open place, we caused considerable perturbation among a large colony of whistling marmots who had been disporting themselves among the rocks of a great talus slope along its eastern margin. At our approach they shambled into retirement as speedily as possible—all except a few portly members of the community, whose dignity, or possibly whose curiosity, forbade flight. They sat mildly regarding us as we crept closer, their occasional half-hearted impulses to escape being checked each time by a sharp whistle from a member of our party, which invariably excited enough interest to cause them to forget their project. After paying our respects to the patriarch long enough to take his picture, we proceeded on our way.

We crossed the wooded hill and descended its farther side to a lake that lay at the base of the Tatoosh Range. Everywhere flowers were spread, along the little watercourses, bending down close to the lake shore, and growing tall and rank in the path of an old fire,—patches of valerian and columbine and crimson paintbrush, and the tall, white, spearlike blossoms of the squaw-grass trying to cover the unsightly blackened logs that crisscrossed the ground for miles.

There is a prodigal touch to nature that puts our prudent foresight to scorn. The trees that don their bravest apparel to meet the winter frosts, the skies that spread such a wealth of color to greet the oncoming night, the flowers that bloom most riotously where the snow lies longest and make the very brevity of the summer an excuse for their lavish profusion,—how these shame that spirit of little faith which would make us niggards of our joy, afraid to give of what happiness we have lest the morrow find us bankrupt! But something of Nature's spendthrift humor enters into every day spent in seeking the high places. A cheerful recklessness assumes control of our usually prudent minds. We take no thought for to-morrow's aching bones; we only know

ON SKY-LINE TRAIL.

From photograph by E. T. Parsons, 1905.

that the day is young, and that we, body and mind, feel as fresh and unjaded as the day, that the spirit of adventure is abroad in the land, and that the gladness of the sunshine has taken possession of our souls.

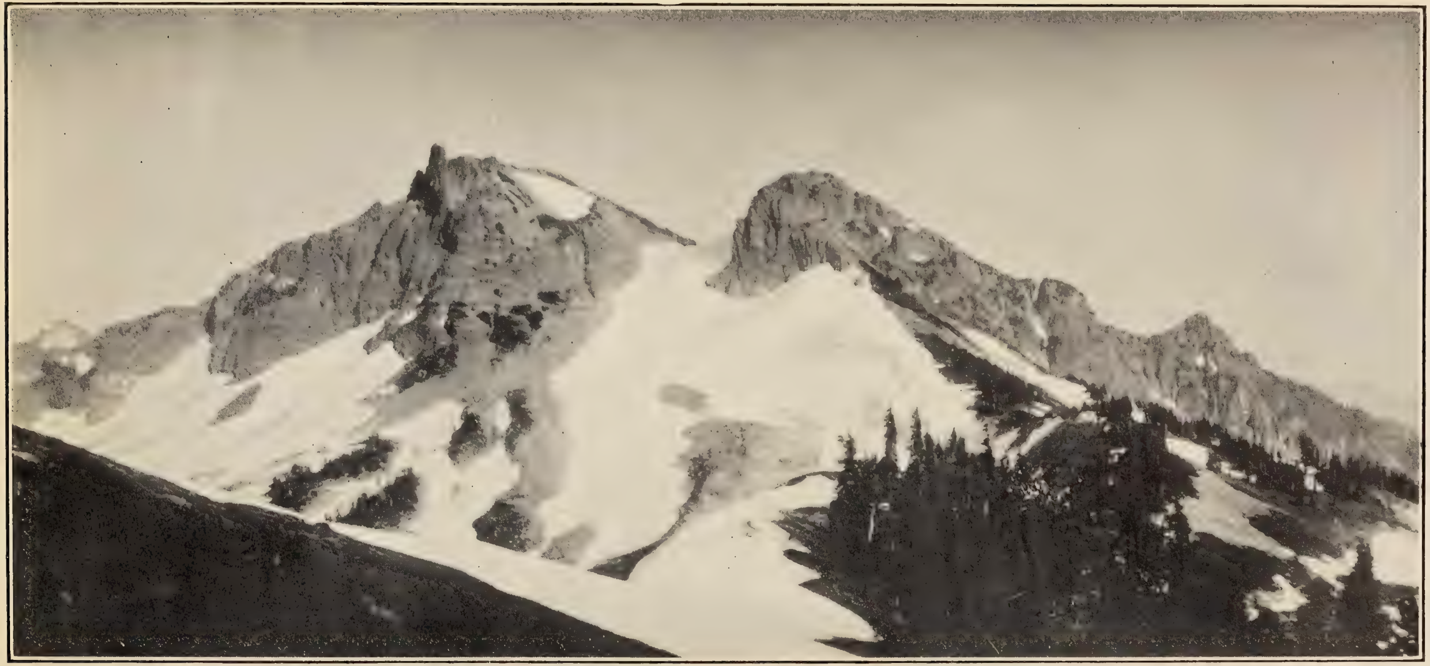
We loitered along like a band of children, making merry over every trivial happening, as when the inlet of the lake proved a little embarrassing for some of us to cross. Those who had waterproof boots chose a shallow place and waded, but one spry maiden whose footgear had seen three summers of mountain wear elected to jump. She landed safely, amid cheers, but her lunch, not faring so well, fell in midstream, and was fished out dripping at the end of an alpenstock with all the *empressement* of a deep-sea rescue.

At a point several miles from our objective peak we started to climb, taking the most practicable route to the snow-fields and passing up through them to the crest. Here we stopped to don snow-goggles or veils and to put on the "war-paint" that protected our faces from snow-burn, and then, with a fresh grip on our alpenstocks, set forth eastward on the "Sky-Line Trail." Starting from the saddle below Pinnacle, we skirted the edge of the peak to the east. Pink heather and white cassiope bells spread close to the snow-line, and the stunted firs, growing on the more open southern slope, crept to its brow to take a peep northward into the world of ice and snow.

Instead of lying almost in line with Pinnacle, as it appeared from camp, Unicorn is set back from the main ridge nearly two miles. Another divide, running almost at right angles in a southerly direction, connects Unicorn with the longer range, and at the intersecting point of the two ridges there is a low peak. High up on this, feeding in the open near its summit, we had a good look at two deer, possibly an eighth of a mile away. They scented our approach almost immediately, and set off at a lively pace around the peak, disappearing finally over the divide very close to the place we had marked for our crossing. They were not destined to escape our acquaintance so easily, however. Evidently they were not used to Sierra Club ways, and, having put a mountain between us, deemed themselves safe from further disturbance. So one of them was composedly finishing his noonday meal just over the brow of the divide; and we, chancing, for a wonder, to be moving rather silently, came within twenty feet of him before he realized our presence. Our surprise, though hardly less than his own, did not take so spasmodic a form. The five or six stiff-legged leaps that took him across the snow into the cover of the dwarf firs could not have been excelled by any jumping-jack in the land. After hearing all one's life such expressions as "graceful as a deer," and "she ran like a young deer," it is both disappointing and disillusioning to have one's first specimen of a real live wild deer go off in a series of rapid-fire hops like that; it destroys one's faith in the poets.

Not very long after this we stopped for lunch, which we finished with business-like rapidity, realizing that the afternoon was upon us, and that, pleasant though the loitering on the sky-line might be, it behooved us to hasten if we meant to conquer our peak. It was past 1 o'clock before we reached the base of the saddle between Unicorn Peak and the high shoulder to the west. Here we held a short council of war. The snow-field was exceedingly steep—so steep that it was evident much time would have to be consumed in the cutting of steps. On the other hand, if we took the alternative offered, and, circling the snow-field, made the approach by way of the shoulder, we ran the risk of encountering precipitous cliffs that might effectually bar our progress and compel us to retrace our way. We finally decided to try the snow-field.

For some little distance it was easy enough, but all at once the slope tilted itself up so that it was no longer safe to trust to the footing afforded by the ice-calks in our shoes or to the balancing power given by our alpen-



Unicorn Peak.

SKY-LINE TRAIL OF THE TATOOSH RANGE.

From photograph by E. T. Parsons, 1905.

stocks; it was necessary to begin the dolorous task of cutting steps. What mountaineers term ice-steps are generally gashes about the size of an ordinary blaze on a tree; but in this case we had roomy landings that two mountain boots could occupy at once. The first man chopped the gashes with an ice-ax, the second man amused himself by enlarging them with a hatchet, while the third scratched away the snow with both hands, like a dog after a squirrel. This excavating process was an agreeable pastime for those in front, but we poor creatures back in the line stood for two mortal hours with a blazing sun beating on our heads, but with our feet gradually freezing, and mounted upward one slow step at a time. Part of the way our rate of progress was measured off by the chanting of a doleful chorus, since become endeared by association to the heart of many a Sierran, whose final word, " Change! " invariably was the signal for a one-step advance. And all the while the slope grew steeper and the rocks at the foot of it looked the more ominous, while the speed of the chunks of ice and snow that came hissing down past us from the choppers gave an unpleasant indication of the momentum that might be gained by a large body in the act of falling.

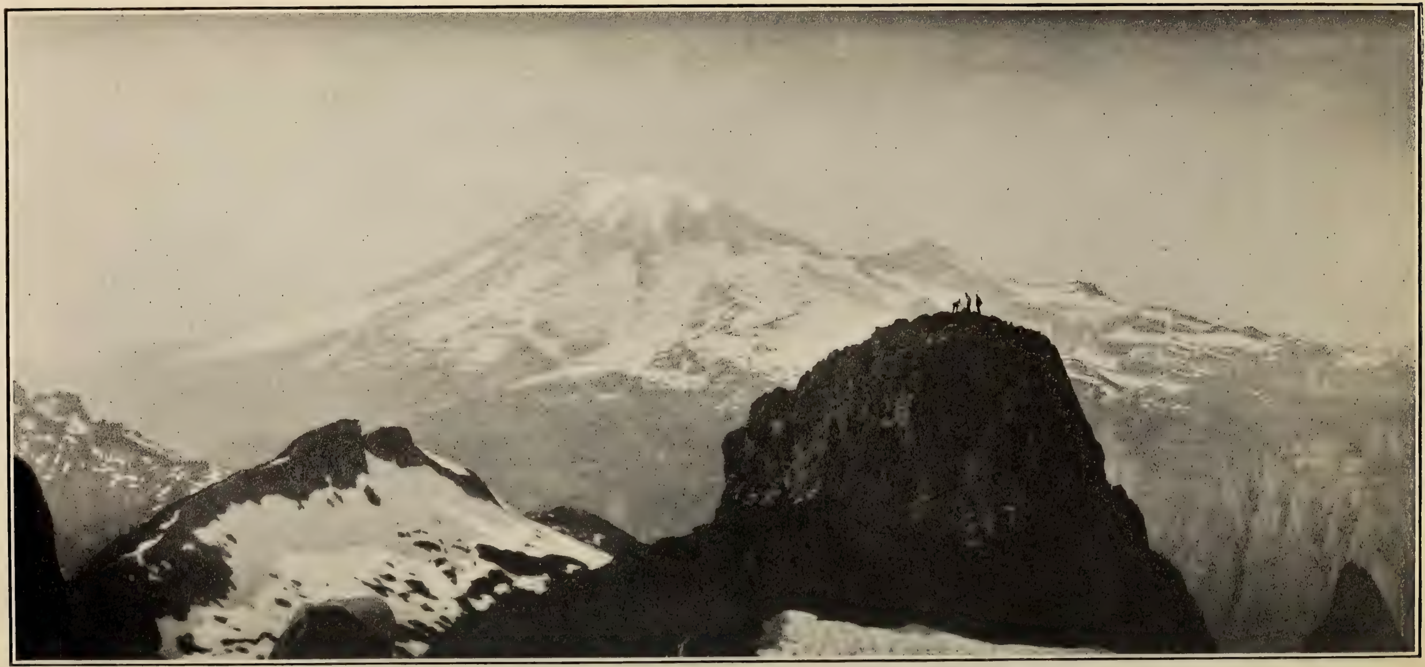
From the crest of the saddle the snow fell away on the southern side to meet a high rock wall, broken down in one place to form a perfect window, through which one looked out straight into the distance,—a wide blue forest country stretching to meet Mt. Adams, whose snows were already touched to gold by the afternoon sun. The pastelle-like softness of the distant picture, so unexpected amid the rough-hewn grandeur of the setting, thrilled the fancy as with a glimpse into the world of dreams that lies beyond the horizon,—" a turn, and you stood in the heart of things."

But the step-cutting had taken so long that we could not afford to linger. Stacking our alpenstocks at the edge of the snow, we began the final rock climb to the summit. There was nothing difficult about this until the

Unicorn itself was reached, a steep, flat-topped mass rising from fifty to seventy-five feet above the rocky, rounded backbone of the summit. Several of the best mountaineers set to work at once on an attempt to climb this horn, a task which proved unexpectedly difficult,—in fact, from the point first chosen, impossible for a single, unaided climber, except for one man, who combined a longer stretch of arm with more than usual strength and skill. He wormed his way up through a cleft or chimney, hands, elbows, knees, and back all working at once, and clambered out on a narrow ledge from which he could reach down a helping hand to the scramblers below, whose futile attempts to find hand- and footholds made them look ludicrously like spiders imprisoned under a glass trying to scale its smooth sides. It was a very tough little piece of climbing, far outclassing any of the rock-work encountered on Rainier.

Two of the girls also decided on going to the summit of the horn, while about half of the party remained on the ridge watching their more strong-minded sisters and more agile brothers being derricked to the goal. A much easier way was later discovered, where the least-skilled climber could readily have made the ascent, but, rather to our regret afterwards, we decided that the approaching evening made it inadvisable to spend any more time on the summit, and so left without attempting it.

Before the more daring climbers descended from their perch, they caught sight of a band of mountain goats, or mazamas, on the snow to the south. One ambitious photographer spent all of his resting-time on the summit in stalking the goats. There were fifteen of them, some on the snow, the rest lying on a grassy slope. Two of them allowed him to get near enough to snap their picture. The great increase of these animals since the Mazama Club outing of 1897, after which the Mt. Rainier National Park was established, forms a strong argument in favor of the proposed game refuges. Three times bands were seen this summer, and it was a common



MT. RAINIER AND THE UNICORN FROM RIDGE.

From photograph by E. T. Parsons, 1905.

occurrence to find tufts of their soft, pale buff-colored wool clinging to the lower branches of trees on some rocky headland.

The panorama from Unicorn, in altitude an insignificant peak, excels that from Rainier, as there the mountain itself is so stupendously big and impressive that it flattens all its surroundings into insignificance. But on Unicorn one is set in the midst of a wilderness of craggy peaks and snowy ridges; the great cones of Adams, St. Helens, and Hood, and the almost invisible form of Jefferson bound the horizon on the south, while northward Rainier closes in your view, the whole bulk of it from the wooded meadows that stretch down to the Paradise River up to the icy crown of Columbia Crest, 14,528 feet above the sea.

Our descent was uneventful, but wonderfully beautiful in the soft coloring of the late afternoon. A few timid attempts at snow-sliding on the part of the inexperienced Californians furnished some amusement to those better trained in the art, and proved a welcome, if somewhat chilling, rest from the rapid downhill walking of which most of our homeward trip consisted.

A " Sky-Line Trail " is a happy one to follow. There are none of the heart-breaking descents of wearily climbed ridges, none of the restless fevers of curiosity to know what lies over the next hill that beset a cross-country walk. The country lies widespread before you on either hand, and you have the comfortable assurance right before your eyes that in a day's journey there is no more desirable crest to be found than the one on which you are standing. And when at the end of a ridge walk you find a peak difficult enough to give the whole trip the spice of adventure, an unexplored peak to give you the joy of the pioneer as well, you feel that your day on the sky-line is perhaps longest to be remembered among all the days of the summer.

THE EFFECT OF THE PARTIAL SUPPRESSION OF ANNUAL FOREST FIRES IN THE SIERRA NEVADA MOUNTAINS.

By Marsden Manson.

Prior to 1849 the forests and even the foothills of the Sierra Nevada Mountains were annually burned over by the Indians. This process effectually suppressed seedlings, and, as it had manifestly been practiced for many generations, the forests were mainly composed of old trees, many badly burned at the butt. The scattered groves of Sequoias, with their hoary fire-scarred trunks and devoid of middle-aged and young trees, the clear floor of the Yosemite Valley, and the great forests of sugar and yellow pine, fir, spruce, red cedar, etc., without seedlings or young growth abundantly attest the prevalence of this practice of annually burning off the leaves. These light fires gave open forests through which one could readily see for great distances.

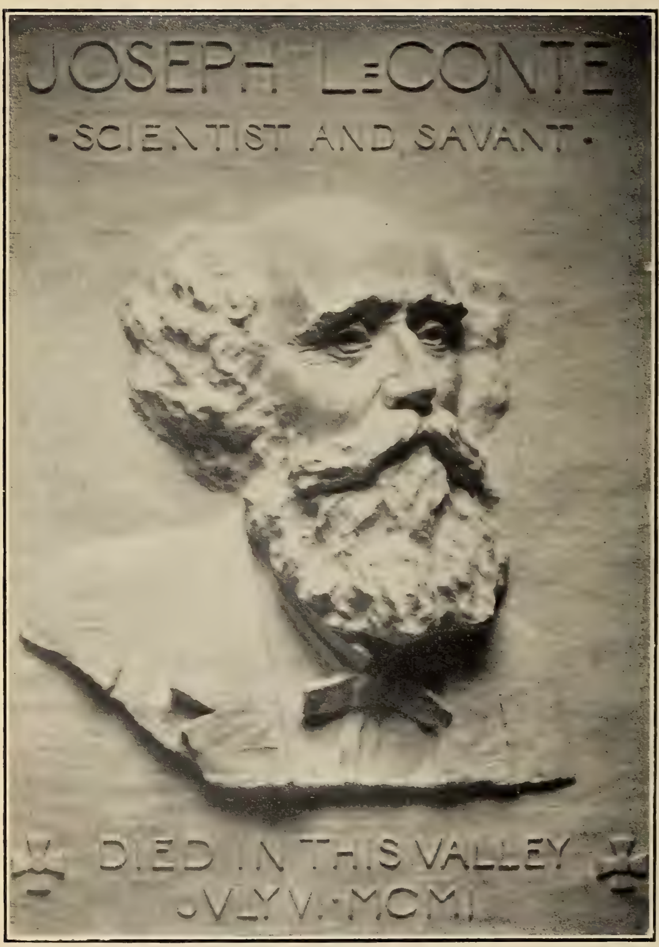
So impressive were these forest vistas and so majestic were the great boles that poetic and impracticable natures at once accepted the Digger Indian system of forestry as unquestionably the natural and correct one. This impression has been strengthened by two facts: first, the absence of a definite knowledge of what forestry really is; secondly, by the establishment of a far worse system than that of the Digger Indian,—namely, the ruthless cutting out of the trees and burning over the areas, designedly, to give better pasture to sheep, or, accidentally, after a heavy growth of young trees had started.

The writer has been familiar with the forests of the Sierra for many years and has quite recently traveled through several hundred miles of forest areas which were previously known to him. In these trips it was distinctly observed that where forest fires had been suppressed, whether the area had been cut over or not, young trees of species not previously found as young trees were beginning to find foothold. This is notably brought out in the Tuolumne grove of sequoias. Here in early visits not a single specimen except full-grown, dead, or dying trees could be found. On September 1st of the current year a young sequoia was found fifty feet to the north of the branch road which runs through the trunk of the dead giant and about one hundred and fifty feet from the forks of the road nearest Sequoia (Crocker's Station). This tree is the largest of the young trees in this grove, and has the following measurements: Height, 23.8 feet; circumference one foot above the ground, 28¾ inches; circumference five feet above the ground, 20⅜ inches; spread of branches, 12.9 feet. Some one, ignorant of its species and import, had whacked off the lower branches and tied his horse to it. We carefully marked it with a ring of stones, cut out or topped all inferior trees around it, and it is hoped that putting its exact measurements at the date named will induce others to note from time to time its rate of growth. These measurements were made of record both at Sequoia and with the commanding officer at Wawona. When young it takes a conical form from the ground, tapering to a fine point. Subsequently Mr. John Crocker, with Mr. C. N. Adams, of Palo Alto, and Mrs. Clark, of Oakland, found about ten smaller trees in the same grove.

Observations here and in other parts of the Sierra showed vast thickets of young trees well sprinkled over with young sugar-pines. The sequoia and the sugar-pine when young are exceedingly tender and are killed by the slightest fire; other species are more resistant, and hence more abundant. The suppression of forest fires will restore these two splendid species to the Sierra, and with either clean cutting or by leaving young and seedling or mother trees there will be no difficulty in preserving forever the forests of the Sierra. The Digger Indian system of forestry will not give timber as a crop; but it must give place to systematic forestry which will admit of either cutting close and reseeding with valuable timber such as sugar-pine or sequoia or both; or by cutting only mature trees, leaving growing timber and seedlings for future generations. The observations of the writer lead conclusively to the opinion that the recuperative powers of Sierra Nevada forests are so great that to preserve them only fire protection and cutting out superabundant young growth is necessary.

To aid in the extension of the best species two systems should be followed: First, inferior species should be cut out before seeding, and superior species should be allowed to seed and be planted; second, in regions near the upper limits of superior species they should be systematically extended and aided, as all species are naturally reaching out toward higher elevations. The situation is by no means as black as it has been painted, and only requires systematic and sustained protection and aid to maintain the Sierra Nevada forever as a source of wealth both of timber and water.

San Francisco, October 30, 1905.


JOSEPH LE CONTE
· SCIENTIST AND SAVANT ·
DIED IN THIS VALLEY
JVLY·VI·MCMI

MEMORIAL TABLET FOR LE CONTE LODGE.

By Douglas Tilden.

From photograph by T. D'Estrella.

IN MEMORIAM: JOSEPH LE CONTE.

By Willoughby Rodman.

This to his memory. 'Mid the scenes he loved
We raise this tribute of our greatful hearts.
For here he dreamed and pondered; here he found
The highest inspiration of his life.
Among these rocks with reverent soul he read
The lesson of the immemorial past.
Here, with his head pillowed on Nature's breast,
His spirit passed into a perfect peace.
When civil strife laid waste his native land,
He turned his footsteps to a newer life.
Too sad the memories of a ruined home,
And seeming death-throes of a well-loved State.
Sad—not repining, weary—not cast down,
He turned his strength unto the present task.
It is our pride that here he found his home,
That from our State, while he abode with us,
He took full measure, honor, trust, and love;
And left his impress on our life and thought.
For if the sacred fire of learning burns
Upon our altar, by his faithful hand
Its feeble flame was cherished. If our lives
Show forth a nobler influence, broader views,
More earnest striving toward a pure ideal,
We know his soul is living in our own.
As o'er Tissa-ack's* mighty dome the sun,
Not with slow dawning, as in other lands,
But with a sudden splendor lights the vale,
So unto him the glory of this scene
Came as a revelation. From that day

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* *Tissa-ack*— Indian name of LeConte Dome, formerly known as Half Dome, or South Dome.

The great Sierra claimed him as her own.
Here did he seek the knowledge that he loved.
Not with the pedant's trick of line and rule,
Nor the dry scholar's catalogue of facts,
Came he unto his task. With lifted heart
And poet's soul, he read time's history.
He read the record of Almighty mind.
He marked the progress of divine ideals
From the first dream of life within the cell,
Unto the perfect flower of human thought.
He traced the soul from formless, thoughtless things
Until it grew into consummate might;
Until it lived in lives like unto his.
Through all the varied, seeming-hopeless maze
He saw one purpose working to its end.
Striving for knowledge, still he looked beyond
And read the deeper meaning of the world.
He knew the soul of Nature. Reverently
He drew the veil that guards her sacred shrine,
And looked upon her inner mysteries;
And their pure radiance shone upon his face.
Unto his heart the woods and mountains spake;
And if our hearts in harmony respond
Unto the inspiring strains of Nature's music,
We, too, shall hear the grand Sierra's song.

THE SONG OF THE SIERRA.

Ye who are wearied and worn, who have sunk 'neath the weight of your burdens,
Ye whose shoulders are bowed by the yoke of humanity's service,
Ye who have stood by the grave of your youth's divine aspirations,
Ye who have lost the hopes which made all the future supernal,
Ye who have lost the faith which pointed you upward and onward;

Ye whose hearts are seared with the iron of anguish and
sorrow,
Ye whom passions have scorched till the life of the spirit
has perished,
Ye who live, dead in your hearts—hear the song of the
mighty Sierra—
Come back with me, ye who wander; I will lead you
again unto Nature.
Come to that heart whence we sprang, to the infinite love
of our mother.
Far have ye wandered away from the paths which she
showed at life's dawning;
Seeking false gods have ye roamed, while her woodland
shrines were deserted.
The mist and the dust of the world dim your eyes to
your olden ideals.
Come back to the old glad life, to the hopes and the
dreams of your childhood.
Never again can ye know the joys of a vanished Arcadia;
Nymph and fawn are dead, and the heights of Olympus
are silent.
Never again will the joys of a careless and thoughtless
existence,
A soulless rapture and thrill in the sensuous joy of
living,
Gladden your hearts as of old; for life has grown fuller
and deeper;
Higher the reach of your thought, broader the scope
of your vision;
Keener the pangs of the soul, but higher the flight of
the spirit.
Though no more ye may revel in careless delights of
your childhood,—
Purer joys shall you know if you turn again unto Nature.
Still in her woodland temples the fires of her altars are
burning;
And there may your souls renew the faith and the hope
of life's morning.

She biddeth you be at rest while she lulls you to sleep
on her bosom
With the murmuring music of streams, and the slumber songs of the breezes.
She will bid you go forth to your task, it may be unto
sorrow.
She wills that you live your life, not lapse into
dreaming.
She wills you not always to kneel at her altar in rapt
adoration;
She wills that you show in your lives, in your labor, the
joys of her worship.
She will not give you surcease of the labor which comes
as life's portion;
But she giveth you peace and hope,—the peace of the
vales and the forest,
The stately calm of the summits, the hope that is born
on the mountains.
She giveth you will to know her inner, mystical
meaning,
To meet with eyes unshrinking the apocalypse of her
splendor.
Yielding your mood unto her, your souls are at one with
Nature,
Pure as the snows of the woodland, strong with the
strength of the mountains.
Then with joy will you go to join in life's strenuous
conflict,
Glad with a new-born hope, strong with a new inspiration.
Though you may pass into strife, though your days may
be clouded by sorrow,
Dream in the darkness a dream, sing in your sorrow a
song.
Though the journey be weary and long, though your
spirits fail in the battle,
Still in your hearts shall you hear the song of the mighty
Sierra.

Thus did the grand Sierra speak to him;
And thrilling chords of that inspiring song
Sound in the message which he gave the world.
  But not in poet's dreams his force was spent;
He lived the life of science. To his mind
Life was one earnest, ceaseless quest for truth.
He looked across our close horizon's rim
And sought to pierce the infinite beyond.
He followed truth unfaltering, pausing not
If some great thought led him beyond the bounds
Set for our feet by narrow faith or creed.
Breaking the shackles by convention wrought,
He lived the free, true life of intellect;
One of the fearless few who dared to know.
Since thought's first dawn a few unconquered souls,
Braving the bigot's wrath, have stood for truth;
And on the lonely watch-towers of the world
Died, waiting for a day that never dawned.
Forever in the vanguard of the right,
Their onset broke the phalanx of the wrong.
The rack and stake but mark the battle-fields
Where error sought to check their bold advance.
Martyrs and heretics, despised and scorned,
Their death-fires light the beacons of the world.
Not in their time their victory; now they stand
Star-crowned above our level, on their brows
The glorious dawning of a grander day.
And he whose memory we consecrate
Was one of these. With deep, far gaze
He saw, through mists of error, God's own truth.
  Unto his memory we dedicate
The labor of our love. Long may it stand,
Our humble tribute to a noble life.
Unto our brotherhood this place shall be
Forever sacred. Let us enter here
With heart and mind solemn and reverent,
Responsive to the spirit of the place.
For this is the high temple of our creed;

The creed of those who seek to know the truth,
Who seek it where its lessons are inscribed
Upon the deathless pages of the rocks,
Or told in thrilling whispers of the trees,
Or sung by murmuring ripples of the stream,
Or where in grander harmonies resounds
The diapason of the cataract.
And let us hope, that, waiting by our shrine,
His spirit shall lead us, bidding us be true,
True to the love of Nature, true to truth.
If to our hearts the love of Nature brings
The revelation of her higher law,
Her deeper meaning; if we honor those
Who knelt at Nature's shrine, who lived for truth,
This is the center of our dreams and hopes;—
Yea, this is holy ground
Made holy by the thought that 'mid such scenes
The noblest aspirations of the soul,
In passionate longing for the beautiful,
Rise to the Infinite, and by the thought
Of him whose memory we here enshrine,
The memory of one who sought the truth,
Of one who loved the beautiful and good,
Whose life was gentle, beautiful, and true.
   In loving memory of his life and work,
With reverence for the soul with which he wrought,—
To noble uses, to the love of truth,
To love of nature, to our brotherhood,
We dedicate this temple in his name.
His life was Nature's; at its close his soul
Entered the rest she keepeth for her own.

Now to his wakened mind the gathered lore of the ages
   Seemeth a single page of the luminous volume of time,
Now to his lifted spirit the song of the mighty Sierra
   Blendeth with Nature's anthem in harmony thrilling, sublime.

That which we seek in our blindness, yearning with impotent passion,
Wandering guideless, alone, in the depth of an infinite night,
Is revealed to him illumed with the glorious splendor of noonday,—
Finding his life's ideal, he cometh into the light.

Now are his dreams come true; all the tireless watching and striving
Blend in a perfect peace, in the rest of a task well done;
Long had he labored and waited, seeking one goal in the distance,
Now he knoweth the truth; now is life's victory won.

WILD ANIMALS OF THE MT. RAINIER NATIONAL PARK.*

By Alden Sampson.

The presence of wild animals greatly adds to the pleasure of those who visit the Mt. Rainier National Park. Fortunately, it is not yet too late to preserve this feature of interest; in the future it may be made a still greater source of delight. White goats (*mazamas*) are found in abundance high up among the ice and snow on rocky ridges, and during the heat of the day on the glaciers, where, after feeding, they seek asylum from their enemies. Here the breeze is always fresh and agreeable; by its aid they are rid of the pest of flies which at a lower altitude are an intense annoyance.

During the ascent of Mt. Rainier made by the Sierra Club we were so fortunate as to see about fifteen goats at some little distance across the ice, on the ridges above the Nisqually Glacier, and previous to this members of the party at various times had secured photographs of these interesting animals at close range. When stalked from above, it is not difficult to approach close enough to them for the purposes of photography, as they range high up on the mountain, and are but rarely disturbed by human visitors. Their presence contributes much to the interest of the upper reaches of the mountains, which except for them would be almost without animal life.

There are no elk on the flanks of Mt. Rainier. We were told of the presence of a few still to be found in the Tatoosh Range to the south, and on Goat Mountain, both close to the southern limits of the park. The question of a winter range for these animals, in case they were established here, is one that would have to be carefully studied. No tract obviously suited to that purpose was noted by us. Should such exist, elk could be brought from the Olympic Forest Reserve to form the nucleus of a herd here. There are now in the Olympics 2,500 or 3,000 elk of the *Cervus occidentalis,* or *Roosevelti,* almost the sole survivors of the vast bands which once ranged on the Pacific Coast. Were an attempt made to bring to Mt. Rainier individuals of the Olympic herd, it would probably be necessary, in order to accomplish their transfer without injury and to retain control of them afterwards, to hold them first segregated for several months under constant supervision and care, and thus partially domesticate them, before attempting to accomplish such removal to their new home. It is not, however, believed that the conditions are favorable for their presence here.

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* This article is part of the report of the Joint Committee on pages 44–50.

Mountain sheep, while they range on the east side of the Cascades, are not found in the park, and there is no sign of their formerly having been there; probably the winter range is not such as they would accept. These creatures do not dislike a wooded range such as may be found in an open forest where grass abounds, as so often is the case in the Rocky Mountains and southern Sierra; but it is to be noted as a characteristic of large tracts of the Washington woods, and particularly of those around Mt. Rainier, that grass is rarely found except immediately below the glaciers and in the valleys in that vicinity. While the ground in the forest is covered with a solid mass of verdure, a tantalizing sight to the hungry horses of the traveler there, unfortunately for them it mainly consists of a feathery moss, or of the scanty "browse" of bushes, or of slight herbage not acceptable to the palates of horses, elk, or mountain sheep.

Deer are found in considerable abundance, and are still killed to some extent, regardless of law. The writer saw on one excursion a string of a dozen or fifteen deadfalls which had been baited with deer-meat and set for marten two winters previously. In one of these traps was a doe's skull, which told its story. As the number of competent rangers is increased, the practice of killing deer for meat will be discountenanced, and a sentiment created which, as in the vicinity of the Yellowstone National Park, will prove the real safeguard of the wild animals. Numbers of deer were seen by our party. The conditions are favorable for their increase.

Only a few bears survive of the many that were once found in this region. In Spray Park, to the north of the peak, one of the black variety with two cubs was observed. Cinnamon bears are occasionally seen, but the grizzly bear is now extinct in this whole region. Berries of many sorts abound, and various roots and herbs are found on which bears can subsist at all seasons of the year when not in hibernation. This food is scattered enough to give the beasts all the exercise they need to maintain health. These animals are perfectly harmless so far as man is concerned, and a sight of them in their wild state is of no slight interest. The few remaining specimens should not be disturbed. The three seen on our excursion were gathering huckleberries on a hillside, and were under observation for perhaps an hour, the mother eagerly satisfying her hunger, and the young making repeated excursions of exploration, from which each time they returned in a panic of apprehension, until they had convinced themselves by actual touch that their friend and sheltering providence was still there. A more engaging spectacle of diligence and of content tempered with vigilance it would not be easy to find.

The wolverine, carcajou, great American sloth, or skunk-bear, as from his shaggy back and tail he is sometimes discriminatingly called,* a beast equally rare and equally hateful, is occasionally seen within the bounds of the park. Probably for many years to come this animal will continue at remote intervals to enter within the precincts of the park.

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* It is to be noted that when the "Wolverine State" was so called, the designation was bestowed by the inhabitants of a neighboring State, and was not given in affection.

There are a considerable number of cougar, more generally called mountain lions, once universally known as panthers, and these, so far as the interests of man are involved, are perhaps somewhat of an evil. They doubtless kill young deer, particularly in the winter, when the latter are at their mercy. If elk were established here, or in this vicinity, care should be taken that the number of the cougar be not allowed indefinitely to increase. In the Olympics they are a source of annoyance.

In regard to the timber-wolves nearly the same might be said. Individually, they are of interest to man, as creatures of great power, courage, and sagacity, and for this reason one would naturally be reluctant to see them exterminated. The view of a fine timber-wolf seen one morning through a rift in the fog, on the slope of a mountain ridge, in the Olympic Reserve in 1903, was the source of great satisfaction, and one of the most agreeable recollections to the fortunate beholder.

There are a considerable number of coyotes, and their call at night, as thrilling and exhilarating a sound when heard in the forest as ever greets the ear of the mountaineer, is always a keen satisfaction to one who loves the wild life. The musical chorus of the coyotes at nightfall and the scream of the loon are two sounds of unsubdued nature to be stored away in memory among one's choicest recollections, like the booming of a frozen lake at night, or the "swish" and crackle of the northern lights in a winter sky.

It is unwise to exterminate the last representatives of any tribe. So long as rabbits abound the woods will be wide enough for representatives of all the animal kingdom in our part of the world, even if eaters of meat like ourselves. The methods of nature may be trusted to a very considerable extent to maintain an equilibrium. The less man attempts to regulate the whole created universe, the greater in the end will be the sum total of happiness for him and for all concerned.

Of other fur-bearing animals, a few beaver still survive, but their presence and haunts are known to hunters, and it is doubtful if they will much longer continue to wear their coveted hides. Where they are found, their houses and dams are always of great interest to the intelligent traveler, but this has practically long ceased to be the case in the Mt. Rainier National Park.

Fisher, marten, and otter, and several varieties of weasel are occasionally found, also the civet-cat and the lynx. Only a rare glimpse will ever be had of these creatures in their wild state, but such a view is to be prized in exact proportion to its infrequency. Two varieties of skunk are found at a lower altitude, but perhaps these do not penetrate into the park proper. Their presence may well be spared here. A gray fox is found on the mountain, and several varieties of mice, which doubtless are of interest to him. A chipmunk lives here, the Douglas squirrel, the ground-squirrel, and wood-rat,—this last the hero of many a story of misappropriation and of strained relations between the occupants of cabins in forest or prairie. Rabbits are found, and the very interesting pika, or cony, who lives among the broken rocks at an altitude corresponding to the lower glacier belt and somewhat higher still; his cry as he sits at the entrance of his hole is always agreeable to the ear, and the glimpse that one gets of him as he scurries to cover is a pleasant little picture to recall.* He and the whistling marmot are generally found sharing the same sort of conditions, and this has resulted in a sort of similarity of habit. This little hare is of especial interest as having a call not unlike the bleating of a lamb, a curious and distinguishing circumstance for a representative of this silent clan. His designation as the "little chief hare" is a well-inspired appellation. Although the smallest of his tribe, he seems to have an individuality and sort of fearlessness quite his own. He differs from the generality of the rabbit tribe not only in uttering a frequent call, which seems but to emphasize the silence of the hills, but in the fact that he gathers his food and eats it at the entrance of his den, whether it be sprigs of succulent herbs, or flowers agreeable to his palate, or clusters of berries. He resembles in this respect the two characteristic mountain denizens next to be mentioned, the whistling marmot and the haplodon. The former of these closely resembles the Eastern woodchuck, except that he is more powerful and has a well-known cry, which he is fond of uttering, a very sharp and piercing whistle. In the upper grassy valleys about Mt. Rainier great numbers of these creatures abound, and where they have not been shot at are often seen. The remote valleys and barren ridges around the peak would be deprived of one great charm were the alert and shrill challenge of their guardians no longer to be heard. They are fond of taking their station on the most prominent rock of a slide, or on a projecting boulder along a ridge where the whole hillside or valley may be commanded, and on this lookout rock the greater portion of their time during the day is spent, basking in the sun when that shines, and ever maintaining a shrewd observation of all that goes on around them. In many cases the surface of their lookout rock has become quite polished from its use by many succeeding generations of watchers. St. Simeon Stylites was hardly more constant. Unfortunately for their peace of mind, the discovery has been made that marmot stew is good to eat. As the park is more scrupulously guarded these animals will be protected, and it is to be hoped will long remain a source of pleasure to the traveler.

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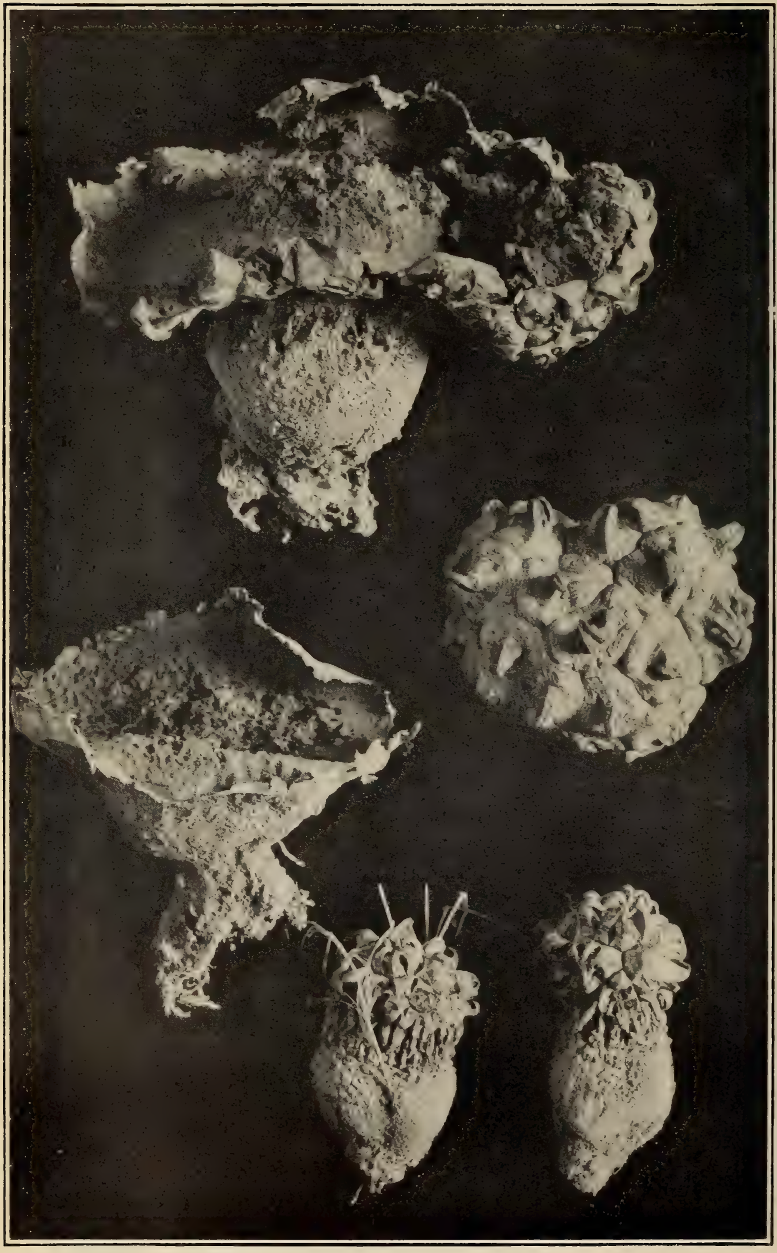
* It is strange that there is a passage in the Bible referring to a totally different animal (the Hebrew *shaphan*) which, as translated, exactly and literally applies to this one: "There be four things which are little upon the earth, but they are exceeding wise. . . . The conies are but a feeble folk, yet make they their houses in the rocks."—*Proverbs* xxx, 24–26.

One sees the burrows of the haplodon, or sewellel, all around the mountain, particularly in the vicinity of the meadows near the sources of the glacier rivers. These little beasts are about the size of a muskrat, and are most entertaining in the slight and indirect glimpses which they afford us of their personality; glimpses of their personality but not of their persons. Unfortunately, they are excessively shy, the most so of any animal in America, and although one sees day after day, both here and in the Olympics and Cascades and in similar country over a wide range, their innumerable burrows, and the little supply of fresh herbage at the entrance to their homes, yet is the casual spectator never vouchsafed a sight of these elusive creatures. Their soft fur, and it may be their extreme industry in the excavation of subterranean runways, has given them the name of "mountain beavers." It is a mooted point whether they make a winter cache of provisions; arguments on both sides are adduced. One repeatedly sees at their burrows food in various stages of dessication, perhaps the refuse of their daily supply. The study of their habits by intelligent observers is strongly to be commended.

Among the birds, the ptarmigan is especially worthy of mention. These are in various places quite abundant and tame. A member of the party secured at the minimum range of his camera, which is seven feet, three photographs of a little group of these interesting birds, and their closer protection is greatly to be desired. Ptarmigan are so easy to kill that notices should be put up where they abound, cautioning tourists against molesting them and enlisting the co-operation of all to this end.

In this brief review of the animals of the park, which makes no claim to scientific exhaustiveness, sufficient has, perhaps, been said to suggest how great an element of interest the wild creatures contribute. The portion of the community which is interested in the study of them is a constantly increasing one, and every year more and more people will share in the satisfaction derived from an intimacy with nature, and from somewhat of familiarity with the occupants of the woods and with the wild dwellers on the mountain-side. As a matter of course, citizens of our commonwealth will look to see that taste gratified in a national park.



THE SIERRAN PUFFBALL.

From photograph by the Author.

THE SIERRAN PUFFBALL.

By William Albert Setchell.

When the members of the Sierra Club scatter themselves among the high mountains for the purposes of relaxation and promoting our knowledge of these snowy peaks and ranges, will some of them pause a moment on their various and devious ways to make a note on meeting one of the humbler and less well-known aborigines, yet one which is a noble of high rank in its own class? The aborigine I have in mind is the Sierran Puffball, which, while not by any means the largest of all known puffballs, yet is of fair size, and by its elaborate markings one of the most decorative. No other puffball known has so striking and so elaborate a set of sculpturings on its outer coat.

The Sierran Puffball was first made known to the botanical public in 1885 by Dr. H. W. Harkness, and named by him *Lycoperdon sculptum.* Dr. Harkness told me that the original specimen came from the eastern slope of the Sierra, but he seemed uncertain of the exact locality. In all probability, it came from some locality not far from the region of Lake Tahoe. It is quite certain that it has never been seen except in fairly high altitudes of the Sierra, and, consequently, it seems entitled to the English name which I have placed at the head of these notes on it.

The Sierran Puffball is an easily recognized species. It is six to eight inches long, four to five inches high, and four to six inches broad. Its general shape is that of a broad, flattened pear, for below the swollen upper portion above the ground it has a thick but short stalklike base which is situated below the surface of the ground on which it grows. When entire, the upper rounded portion is marked on the surface by broad pyramidal projections, which are often an inch in diameter at the base and half to three quarters of an inch high in the larger mature specimens. The projections are regularly arranged and give the dorsal side of the puffball the appearance of the back of a tortoise. It is this peculiarity, connected with the large size, which makes this puffball so readily recognized. No one can possibly make a mistake in regard to its identity. All other large puffballs are either absolutely smooth on the upper surface or else marked with minute projections. The projections, then, on the surface of the Sierran Puffball are gigantic, especially when young. Later they often split into three or four, remaining attached by their tips, which also often become curved.

At maturity, the whole puffball becomes dry, the interior being filled with a bright yellow, powdery mass of spores and microscopic threads, while the thick outer covering breaks up into pieces and falls off. In this way the spores are exposed to the winds, which scatter them, and thus spread the growths of puffballs. Finallv all the upper portion disappears, and nothing is left but the stout stalk, more or less buried in the ground, and some fragments of the upper portion and some traces of the powdery spores. Two of these latter stages are represented, about one quarter the natural size, in the photograph accompanying these notes.

Like all other puffballs, and in fact like all other fleshy fungi, this one is seldom entirely free from insects, which find shelter and food within its tissues, thus spoiling the plants for good botanical specimens, and even hindering the proper maturing of the spores. Small specimens are often found which from this or some similar cause have been killed early in their development, and, while not showing the effects of the ravages externally, have become mummified, or dried up. Such specimens show the general characteristics well, but do not show the important spore characters. Two such specimens are represented in the lower right-hand corner of the photograph. They show the sculpturing of the surface very well.

Owing to the scarcity of the Sierran Puffball, I do not suppose that any one has had the opportunity to try its flavor when cooked. The specimens I found were mature, and so dry and dusty that eating was out of the question; but should any be found in the stages when the interior is solid and white, it would be well to try it, sparingly at first, either cut into slices, salted, and fried, or stewed with beef broth, for the flesh of the large puffballs is delicious in its flavor, and none of them are known to be poisonous. Our large species of the neighborhood of San Francisco are much appreciated by the epicures.

Very little is known as yet of the extent of the Sierran country inhabited by this puffball, and it is desirable that much more information should be obtained. Dr. Harkness, as indicated above, does not give any information as to the exact locality whence he received his specimens, but contents himself with saying that the species "is found only at considerable elevations, 6,000 to 8,000 feet, in the Sierra Nevadas." Of the several specimens preserved in his collections at the California Academy of Sciences in San Francisco, only one has the locality marked. That one came from Summit, in Placer County, whence a specimen, collected by Mrs. Charles H. Shinn, is among the plants of the herbarium of the University of California. We have also in this herbarium specimens gathered at Sierra Valley and between that place and Truckee, collected by Mr. Fowler. W. C. Blasdale has collected the Sierran puffball in the neighborhood of Lake Tahoe, and I have specimens taken by myself from a considerable number of fine large plants seen in the neighborhood of Emerald Bay on Lake Tahoe. The photograph represents some of these specimens. From farther south, we have a specimen collected at Tamarack Flat, on the Big Oak Flat road into the Yosemite Valley, by H. N. Bagley; and the late Professor J. J. B. Argenti described to me puffballs seen by him at Crane Flat which certainly must have belonged to this species.

As will be seen, the sum of all our knowledge is small, and it is hoped that much more information may be obtained of its occurrence in the Sierras, both north and south, both as to higher and lower altitudes. The plant is so readily recognized that there is little danger of mistake, but if localities can be reported, accompanied by small specimens, or even by one or two pieces of the upper crust with the pyramidal elevations which are so characteristic, all doubts will be removed. It is for the purpose of enlisting the interest and sympathies of the members of the Sierra Club in the attempt to gain this more extensive and exhaustive knowledge that these notes have been written.

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The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

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REPORTS.

REPORT OF THE JOINT COMMITTEE OF THE MAZAMA CLUB AND THE SIERRA CLUB ON THE MT. RAINIER NATIONAL PARK.

To the President of the United States, and
The Secretary of the Interior:

At a meeting held during the Joint Outing of The Mazama Club and The Sierra Club in July, 1905, in Paradise Park, of the Mt. Rainier National Park, at which meeting were present also representatives of the American Alpine Club, and the Appalachian Mountain Club, a resolution was unanimously adopted to appoint a committee representing those present from the membership of these organizations, to report to the President of the United States, and to the Secretary of the Interior, on the present condition of this National Park, and to recómmend such action for its betterment as might appear desirable.

The following committee was appointed: Chas. E. Fay, of American Alpine Club; W. A. Brooks, of Appalachian Mountain Club; E. P. Sheldon, of Mazama Club; E. T. Parsons, Chairman, of Sierra Club.

To this committee was added Alden Sampson, recently Game Preserve Expert of the United States Biological Survey, who was present during the encampment, and who made an investigating tour and complete circuit about the mountain.

These committee-men have prepared the following report, and herewith beg leave to submit it to your consideration as a disinterested expression of the views and recommendations of nature-lovers and mountaineers.

Very respectfully,

CHAS. E. FAY,
W. A. BROOKS,
E. P. SHELDON,
ALDEN SAMPSON,
E. T. PARSONS, *Chairman.*

ATTRACTIVENESS OF MT. RAINIER NATIONAL PARK TO THE AVERAGE CITIZEN.

It was a wise provision that set aside the Mt. Rainier National Park as a perpetual reservation for the enjoyment and benefit of the citizens of our common country, and every care should be taken to preserve it in its native attractiveness for the generations to come. Such was the unanimous opinion of the large and distinguished body of men and women, representing in their number no less than twenty-two American colleges and universities, in conformity with whose will the Committee making the present report owes its existence.

Though the observations of the majority of the members of the Committee were confined to the southerly portion of the reserve and principally to the district known as Paradise Park, it is felt that, in general, what is true here applies with equal force to all sections of the great reservation.

Because of its comparative accessibility to the large cities of Oregon and Washington, Mt. Rainier National Park, and Paradise Park in particular, is destined to become in future years a pleasure-ground for thousands of people, as the Adirondacks and the White Mountains are for the inhabitants of Eastern States.

Situated just below the snow-line on Mt. Rainier, the grandeur and beauty of the region are unsurpassed. The lower slopes are covered with grand forests, which give way at higher altitudes to the open park country where the valleys and hillsides are carpeted with green sward spangled with myriads of wild flowers, and ornamented with clumps and groves of sub-alpine firs and spruces, the hardy mountaineers of the botanical world. The vegetation extends up the mountain to nearly six thousand feet, above which is the zone of snow and ice whose eternal whiteness makes Rainier a landmark for the traveler and a beacon for the sailor while they are yet scores of miles away.

Rising west of the Cascade Divide and within sight of the Pacific Ocean, where the landward breezes distribute an enormous snow- and rainfall during six months of the year, Mt. Rainier has a great glacier system outranking in this respect as it does in height any mountain in North America outside of Alaska. Its area of glaciers and perpetual snow cover 32,500 acres, and it rises in magnificent outlines to a height of 14,528 feet above sea-level. Within the limits of Paradise Park one of the largest glaciers, the Nisqually, presses down below timber-line in the park, discharging into the river of the same name. Two others, the Paradise and the Cowlitz, are also within walking distance.

On the opposite side of the valley from Mt. Rainier, across the Paradise River, rise the sharp, rugged peaks of the Tatoosh Range, beyond whose serrated sky-line from high points within the park may be seen Adams, St. Helens, Hood, and other snow peaks.

To the scientist, whether he be botanist, geologist, or zoologist; to the artist in search of grand subjects for his canvas; to the camper who loves to pitch his tent where he may listen to the music of falling water and fill his lungs with the pure breath of the hills; to the mountain-climber seeking heights worthy of his ambition; or to the tired business man whose weary brain demands rest away from the busy routine of mercantile life, Paradise Park is happily named. The diversity of the landscape, the solemnity of the silent forests, the prodigality and wonderful coloring of the floral display, the foaming water of the streams that rush down the valleys and plunge over the cliffs in many picturesque falls, with the mighty white dome of Rainier towering majestically over all and clasping with the icy fingers of its glaciers the green slopes below, all combine to make this mountain park a region of irresistible charm.

COMPARISON OF MT. RAINIER NATIONAL PARK WITH OTHER GREAT SCENIC REGIONS.

This appreciation is not confined to persons of our own nationality or race. Foreign world-travelers, lovers of the grandly picturesque, unite in highest admiration of the Rainier region.

Hon. James Bryce, the well-known publicist and a member of the English Alpine Club, and Professor Karl Zittel, of Munich, a geologist familiar with all the aspects of Europe, several years ago, in a joint letter suggesting in advance of National action that the Mt. Rainier region should be reserved as a national park, wrote as follows:—

> "The scenery of Mount Rainier is of rare and varied beauty. The peak itself is as noble a mountain as we have ever seen in its lines and structure. The glaciers which descend from its snow-fields present all the characteristic features of those in the Alps, and though less extensive than the ice-streams of the Mont Blanc or Monte Rosa groups, are in their crevasses and seracs equally striking and equally worthy of close study. We have seen nothing more beautiful in Switzerland or Tyrol, in Norway or in the Pyrenees than the Carbon River glacier and the great Puyallup glaciers; indeed, the ice in the latter is unusually pure and the crevasses unusually fine. The combination of ice scenery with woodland scenery of the grandest type is to be found nowhere in the Old World, unless it be in the Himalayas, and, so far as we know, nowhere else on the American Continent. . . ."

DESTRUCTION OF FOREST GROWTH, WITH RECOMMENDATION FOR INVESTIGATION.

Our Committee has few recommendations to present as to means to be taken to conserve the existing natural features. As an example of what might be done to prevent a deterioration in the sylvan beauty of the park the following seems worthy of mention:—

The growth of the sub-alpine fir (*Abies lasiocarpa*) and alpine hemlock (*Tsuga Mertensiana*) around Mt. Rainier, which forms the extreme limit of tree-growth, is dying rapidly. Besides being objects of beauty these trees have a second very practical value as a means of conserving the water supply by retarding the melting snow in the spring and summer months.

So far as a cursory observation would permit, it is evident that the cause of the death of these trees is not fire, but is either a fungus or an insect disease, or both. It is therefore recommended that the United States Department of Agriculture send an expert to the park to determine definitely the cause of the death of this valuable timber, and take measures to prevent future damage, if possible.

ROADS AND TRAILS.

Too much emphasis cannot be placed on the importance of the means of access to the various regions of this great park with their varied features of interest, and in particular on the desirability of a carefully considered system of roads and trails connecting these regions with each other.

It is earnestly advocated that the Government road, so finely planned and located, from the mineral springs of the Nisqually (locally called "Longmire's Springs") to the upper reaches of Paradise Park, be completed at the very earliest possible date. By it visitors could reach the park in their own conveyances without the expense, inconvenience, and annoyance of packing their outfits and supplies, which now deters many from enjoying this magnificent region.

Paradise Park on the southerly slope of the great mountain is at present the one readily accessible region of this great reservation, and there are only two passable trails by which to reach it. The "old trail" from the unfinished Government road up the north side of the Nisqually River is in good condition, and passes up a beautiful scenic cañon through wooded flats beside the tossing river until the terminal face of the Nisqually Glacier is reached. From this point pedestrians can ascend the steep sides of the cañon to the park proper. This trail well serves the public as it is, and will do so until the fine Government road replaces it. In addition to this "old trail" is the one used at present chiefly to reach Paradise Park, which leaves the Government road near the end of the partly completed four-mile stretch, and, crossing the Nisqually once and the Paradise River twice, enters the park near Camp of the Clouds.

In 1897 there used to be a good trail branching off from this trail just before the second crossing of the Paradise River, above Narada Falls, and leading up the side and along the crest of Mazama Ridge, one of the most striking scenic view-points in the park, to a point just above Sluiskin Falls. This trail, ending at a fine camping-spot on high ground near four or five small lakes, has been allowed to get into bad condition. It should be put in good repair, and this could be done with very little labor.

A trail should early be constructed to Indian Henry's hunting-grounds from the north side of the Nisqually Glacier in Paradise Park. This at first might be for pedestrians only, later to be perfected for saddle- and pack-horses.

The two trails suggested—that from Paradise River to the head of Mazama Ridge near Sluiskin Falls, and the one from the Nisqually Glacier to Indian Henry's hunting-grounds—might be the first of a system to circuit the mountain, and when constructed would render accessible the finest portions of the Mt. Rainier National Park adjacent to the approach by way of Ashford and the valley of the Nisqually River.

As bearing on the development of a system of roads and trails making the entire circuit of Mt. Rainier, we incorporate with our report the following testimony of a member of our Committee well versed in woodcraft and most competent to speak upon this subject. Mr. Alden Sampson writes as follows:—

"With another member of our party this summer I made the circuit of the peak. We traveled with pack-animals and made our journey in a leisurely way, stopping as the view tempted us, or where feed, not a too frequent circumstance, was to be found. We left Longmire's Springs after the departure of the Sierra Club from that encampment, and went by the way of Bear Prairie down the Skate Creek Trail, being obliged in one afternoon to ford that stream, a rocky and at times (for horses) somewhat disagreeable river-bed, no less than thirty-eight times. At present the alleged trail is but a poor affair, shifting about from bank to bank of the stream wherever foothold offers; in one section, on a steep hillside, it can hardly be called a trail at all, being quite impassable for laden pack-animals coming from the Cowlitz River. A trail laid out intelligently here in conformity with the broad characteristics of the valley is much to be desired.

"Following up the Cowlitz River we forded at the mouth of Muddy Fork, followed up the Carlton Trail to Fish Lake at the summit, thence along the crest of the Cascades by the old Klikitat Trail, which commands superb views of Mt. Rainier from the east, the finest of all views to be obtained of that mountain. From the mining settlement of Gold Hill we continued our course through Bear Gap, down Silver Creek to the East Fork of White River, and up that to Glacier Basin, thence around the lower end of the Winthrop Glacier, and around the Carbon Glacier. Looking up from the trail across the moraine here, we could see the edge of Spray Park above us, only two or three miles distant, yet to reach it we were destined to travel nearly, if not quite, forty miles, descending the Carbon River to Fairfax, and thence ascending the Mowich River Trail to the lake below the park, where we left our horses. Going through Kapousen on our return, we completed the circuit of the peak, an excursion which had afforded many and assorted experiences of discomfort soon to be forgotten and of delight to be long treasured."

It is obvious that this strikingly fine excursion should be rendered feasible for all who would enjoy the park in a large way.

At present there are no trails by which the twelve or twenty glaciers, according as great or lesser bodies of ice are enumerated, may be visited in succession. In order to reach them long roundabout journeys have to be taken through the woods, where there is no feed for horses, and forced marches are often required to arrive at places suitable for the stock at night, and in some instances grain must be carried for their sustenance, since in the woods there is too often nothing whatever for horses to eat. Trails should be opened from one glacier to another, and permits granted to the proper persons to provide houses of entertainment at suitable places for travelers. At present accommodation of this sort is offered at Reese's Camp in Paradise Park only.

The glaciers are of commanding interest, and are destined within a few years to be visited by great numbers of people from all over the country. Trails opening these to view could easily be constructed at a tithe of the cost of the Government road from Longmire's Springs to Paradise Park. Trails of this nature would give views of mountain scenery unique in this country to such as are not afraid of an excursion in the saddle, and would be a boon to travelers greatly to be desired.

In laying out such trails advantage would naturally be taken of the meadows which are found in many places near the foot of the glaciers, so that proper feed would be afforded to stock. By the creation of these trails the great opportunity for the enjoyment of scenery on this grandest of American mountains would be for the first time placed within the reach of all.

PRIVATE HOLDINGS IN THE PARK.

There are few private holdings in the park—but one to the knowledge of the Committee. This one, however, contains the fine mineral springs near the Nisqually River. This holding or claim should be extinguished at the earliest possible date by purchase or condemnation proceedings and a good hotel erected here, either by the Government or by such lessee as would provide adequate and suitable accommodations for the public. This claim and its crude betterments, if bought at a fair compensation, would cost but little, and thus could the way be opened for proper treatment of this gateway to the finest scenic regions of this grand National Park.

WILD ANIMALS IN THE PARK.

[This article is of such general interest that it has been given a place amongst the principal articles of this number.]

REPORT OF OUTING COMMITTEE.

The Outing of 1905 to Paradise Park and Mt. Rainier in the State of Washington was one of the most memorable outings ever undertaken by the Club. The Sierra Club party numbered approximately one hundred persons, of whom twenty-five were guests from the Appalachian Mountain Club of Boston and the remaining seventy-five members of the Sierra Club. The Mazama Club also had a party of some seventy-five or eighty persons in the park at the same time. This meeting of so many representatives of the four mountaineering clubs of America (for many of the members of the three clubs above named were also members of the American Alpine Club) was a noteworthy event which will probably not occur again for many years.

The Sierra Club party visited the Lewis and Clark Exposition in Portland prior to the main trip and were royally entertained by the Mazama Club. A trip to Mt. Hood, which was climbed by about sixty members of the party, and an all-day excursion on the Columbia River were pleasant diversions during their stay in Portland.

Paradise Park proved to be a wonderful camping-ground, with its alpine meadow-land abloom with myriads of flowers, guarded by sentinel fir and spiny hemlock, enlivened by stream and waterfall, and embraced in the giant arms of the grinding glaciers which extend down on each side of the Park from the towering ermine-robed mass of Mt. Rainier.

Warned by the fatalities of the past that had occurred on this mountain, its climb was undertaken by the Sierra Club party of sixty persons (one fourth of whom were women) with every precaution to guard against accident. The climb to the summit from Camp Muir certainly established a record for so large a party, which arrived on top about 9:30 A. M., having ascended almost 5,000 feet in altitude in five hours. Though the climb for a portion of the distance was made over very steep and dangerous ice-slopes, necessitating the cutting of steps, yet no accident of even a trivial nature occurred. Several hours were spent on the rim of the crater, and the descent to the main camp was made in time for a 6:30 dinner. Mr. Parsons, of our committee, had previously made the ascent, and it was largely due to his able guidance and generalship that the outcome of the club ascent was so happy. The provision of two Khotal stoves at Camp Muir, which enabled the party to have hot food, tea, and soup for supper and breakfast there, doubtless added to the ease with which the trip was made. Forty members of the Mazama party made the ascent on the day following without accident, so that 1905 will probably long remain a record year for Rainier as far as numbers are concerned.

An excursion on Puget Sound was made on the return to California. About thirty enthusiastic members stopped over at Sissons and climbed Mt. Shasta, most of them having already climbed Hood and Rainier—certainly a record of which they may justly be proud, to have conquered the three principal snow-capped peaks on the coast in one season.

Though this Outing took place so far from the Club's headquarters, and the cost of transporting the equipment and the expenses of the cooks and assistants for so long a trip amounted to several hundred dollars more than the Club had paid on past Outings, yet it was a financial success, and a sufficient balance remains in the treasury with which to meet the preliminary expense of preparing for the 1906 Outing.

This Outing will be made to King's River Cañon with side trips to Bullfrog Lake and Tehipite Valley. In a year or two a wagon-road will have been constructed into the cañon, and it is to give our members another opportunity of visiting this wonderful region in its unaltered condition that this trip has been planned. It is encouraging to note that there are more applications for this Outing on file than ever before at this time. The Outing announcement accompanies this BULLETIN.

WM. E. COLBY, *Chairman,*
J. N. LE CONTE,
E. T. PARSONS,
Outing Committee.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is at Room 316, Third Floor, Mills Building, San Francisco, where all the maps, photographs, and other records of the Club are kept, and where members are welcome at any time.

The Club would like to purchase additional copies of those numbers of the Sierra Club Bulletin *which are noted on the back of the cover of this number as being out of print, and we hope any member having extra copies will send them to the Secretary.*

San Francisco, July 15, 1905.

Secretary Sierra Club, San Francisco, Cal.

Sir: We have the honor to inform you, in accordance with instructions from the Grand Parlor, Native Daughters of the Golden West, held in San Jose, California, from June 12th to the 17th inclusive, that the inclosed resolutions, conferring on a peak in the Yosemite National Park the name "Mt. Junípero Serra," were adopted by the Grand Parlor.

We most earnestly desire your approval and co-operation in this effort to perpetuate the memory of the founder of the missions. Very respectfully yours,

(Mrs.) Lilly O. Reichling Dyer,
(Mrs.) Cora B. Sifford,
(Miss) Harriett S. Lee,
Committee.

Whereas, The life work and extraordinary achievements of Father Junípero Serra, in the exploration of the unknown territory which afterwards became the State of California, are worthy of the admiration and praise of all who love this State; and

Whereas, It is but simple justice to acknowledge the debt of posterity to a great, good, and unselfish man, and to perpetuate his memory by some enduring memorial; and

Whereas, There is such a memorial ready and undedicated to the fame and glory of any one in an unnamed peak (as stated by City Engineer Grunsky in the reports of the Board of Public Works of the City and County of San Francisco, for the fiscal years 1901-1902 and 1902-1903, p. 210), located in the watershed of Lake Eleanor at the head-waters of the Tuolumne River, and described as being 10,510 feet in height; therefore be it

Resolved by the Grand Parlor of the N. D. G. W., assembled this fifteenth day of June, 1905, in San Jose, California, That the aforementioned mountain be named Mt. Junípero Serra; and be it further

Resolved, That copies of these resolutions be sent to the Governor of the State of California, the President of the United States, the United States Geological Survey, the National Geographic Society, the Geographical Society of the Pacific, the Geographical Society of California, the Sierra Club, the California Club, the press, and to any other persons and societies that the Grand President may direct; and that the Government, the press, and the public are hereby requested to accept the name hereby given and to assist in making its use accepted and general to the end that the pioneer of pioneers may be duly honored in the land for which he worked and in which he died.

LILLY O. REICHLING DYER.

SAN FRANCISCO, Oct. 27, 1905.

MRS. LILLY O. REICHLING-DYER, 2708 Hyde St., San Francisco.

Dear Madam: Replying to your favor of July 15th, inclosing certain resolutions adopted by the Grand Parlor of the Native Daughters of the Golden West, I will state that the matter contained in those resolutions was referred by the Board of Directors of the Sierra Club to Professor George Davidson as a committee of one to report upon the matter.

I herewith inclose the report of Professor Davidson, which is sent you by way of suggestion, and I wish to assure you that the Sierra Club will be only too glad to co-operate with you in any matter which pertains to the preservation of the scenery and other natural features of our Pacific Coast.

Very respectfully yours, WILLIAM E. COLBY,
Secretary of Sierra Club.

2221 WASHINGTON STREET,
SAN FRANCISCO, CAL., Oct. 5, 1905.

TO THE BOARD OF DIRECTORS SIERRA CLUB, SAN FRANCISCO.

Gentlemen: On the 23rd September, at a meeting of the Directors of the Sierra Club, the undersigned was appointed a committee to frame an answer to an undated circular from the Grand Parlor of N. D. G. W., stating that on the 15th of June, 1905, an unnamed mountain in the Sierra Nevada, "located in the "watershed of Lake Eleanor at the head-waters of the Tuolumne "River, and described as being 10,510" feet elevation, was given the name of *Junípero Serra* to commemorate the life services of that missionary; and asking the Sierra Club to indorse their proceedings.

I beg to report very briefly to the Club that the first missionaries who came to this coast were Fathers Juan Crespi and Francisco Gomez. These fathers came with Governor Portolá's expedition of 1769, to the port of Monterey, and were with the party when it discovered the Bay of San Francisco.

In the Portolá expedition of 1770 Father Juan Crespi came with the party by land; and the President Father Junípero Serra by sea, on account of his physical infirmities.

These fathers assisted Governor Portolá in founding the Mission of San Carlos at Monterey, which was soon removed to the northeast shore of Carmel Bay, for sufficient reasons.

Father Crespi continued his labors in California. President Father Serra spent his life in founding other missions on the coast hence to Lower California. He was familiar with the mountain ranges of Santa Lucia and Santa Ynes; and it is believed that he never saw the Sierra Nevada.

It therefore seems to me that some one of the unnamed peaks of the Sierra Santa Lucia stretching far southward from Carmel Bay would more appropriately bear the name of Father Serra. In that remarkable range, overhanging the Pacific for fifty miles, there are several unnamed peaks of 3,700 to 4,000 feet elevation. They are the landfalls of our navigators, and they were familiar to the early fathers.

The name of Junípero Serra in the Sierra Nevada will be simply a geographical record; his name upon one of these coast peaks that barred the expeditions of 1769 and 1770 will be a living designation to some marked and well-known landfall appealed to every day by the mariner and traveler.

Along the Sierra Santa Lucia, within a range of sixteen minutes of latitude, and less than three miles from the ocean, I note the following peaks unnamed on the latest charts of the United States Coast and Geodetic Survey:

	Latitude.	Height.
1	36° 11′	4,032 feet
2	36° 09½′	3,900 feet
3	36° 08′	4,019 feet
4	35° 55′	4,014 feet

This unique relation suggests that four names of the expeditions of 1769 and 1770 might well be applied to recall the heroic services to our State of Governor Gaspar Portolá, Don Miguel Costansó the engineer, Father Juan Crespi, and the President Father Junípero Serra.

Very respectfully submitted,

George Davidson.

San Francisco, November 8, 1905.

Secretary Sierra Club, San Francisco, Cal.

Dear Sir: Your reply of October 27th to my letter of July 15th, regarding resolutions to name a mountain peak after Junípero Serra, adopted by the Grand Parlor of the Native Daughters of the Golden West, has been received by me.

I have read with particular attention the report of Professor Davidson, and sincerely thank the Sierra Club for the suggestion he embodies therein.

His report shall be considered by the committee together with other suggestions that have been received.

With appreciation of your courtesy, I am,

Yours very truly,

Lilly O. Reichling Dyer,
Chairman committee naming mountain peak.

Washington, D. C., June 7, 1905.

Secretary Sierra Club, San Francisco, Cal.

Dear Sir: I have to acknowledge, with many thanks, your courteous note of May 31st, in which you inform me of my election as an Honorary Vice-President of the Sierra Club. It gives me great pleasure to accept the position, and I beg that you will express to the Board of Directors my appreciation of the honor which has been done me.

Very truly yours.

Gifford Pinchot.

Stanford University, Sept. 14, 1905.

Secretary Sierra Club, San Francisco, Cal.

Dear Sir: Your kind letter notifying me of my election as Honorary Vice-President of the Sierra Club I find on my desk on my return from Europe. I take pleasure in accepting the honor, and I feel that it is a great one. As a member of your Board of Directors I was able to do but little on account of the great pressure of my duties here and of outside matters in which I am interested. At the same time, I have the deepest interest in the work of the Sierra Club, and doubt if any other society to which I belong comes as near to my heart as that. Perhaps I should have found it necessary to attend meetings oftener if I had not found the Board of Directors always so admirably competent.

Very truly yours,

David S. Jordan.

EDITORIAL DEPARTMENT THE CENTURY MAGAZINE,
NEW YORK, May 29, 1905.

SECRETARY SIERRA CLUB, San Francisco, Cal.

Dear Sir: I take great pleasure in acknowledging receipt of your letter of the 18th of May informing me that I have had conferred upon me the honor of election as one of the Honorary Vice-Presidents of the Sierra Club.

My very great and sincere interest in the work of the Club and my admiration for its accomplishment in various directions make me appreciate fully the compliment that has been paid me in this election, and I beg to convey my thanks and respects to the Board of Directors.

Respectfully yours,
ROBERT UNDERWOOD JOHNSON.

VIENNA, AUSTRIA, May 20, 1905.

SECRETARY SIERRA CLUB, San Francisco, Cal.

Dear Sir: I beg to acknowledge with much appreciation the receipt of the courteous invitation extended by you on behalf of the Sierra Club to accompany you as your guest on your Fifth Annual Outing. The trip which you have so carefully planned is one in which I should take great pleasure, if I might be privileged to share in introducing your members to the grand old peak that I have so long known and which still stands first in my affections among the mountains of three continents. I fully indorse the statement which you quote from the Hon. James Bryce regarding the noble form and peculiar charm of Mt. Rainier; and sympathizing heartily with the objects of the Club, I the more deeply regret that I am prevented by pressing scientific work from joining you.

Permit me to wish the Club and its guests the fullest enjoyment of the delightful outing planned. Pardon me if I add a word of caution against the loose, treacherous volcanic rocks, so different from the firm granite of the Sierras, even in the Tatoosh Range.

And believe me, with sincere appreciation, yours truly,
BAILEY WILLIS.

THE GRAND CAÑON OF THE TUOLUMNE.

SAN FRANCISCO, Aug. 21, 1905.

SECRETARY SIERRA CLUB, San Francisco, Cal.

Gentlemen: I take pleasure in communicating to you the fact that your canister No. 5 and its inclosed scroll of names deposited in the cairn on the ridge back of Muir Gorge in the Grand

Cañon of the Tuolumne was in good order on the 10th inst., when I passed that point. I opened the canister, perused the contents, signed my name, and replaced it in its resting-place, taking care to add a rock as a seal to prevent the canister falling out or being drawn out by an inquisitive coon or trader rat.

At that date the signatures were as follows: 7/26, '94—Messrs. Price, Solomons, Brann, Bonner, Colby; 8/12, '97—Mr. and Mrs. R. M. Price; 7/22, '04—Messrs. Parsons, Lawson, Haskell, Rodman, McDuffie, Lasell, Avery, Tappaan, Houze, Kimball, Badè, Hart, Cahn, Knapp; 8/10, '05—S. L. Foster.

I had a very enjoyable though at times rather strenuous trip alone, carried ten days' provisions and blankets, missed no meals nor night's rest, caught all the trout I desired to eat, spent four and a half days between Tuolumne Meadows and Muir Gorge and two days between the latter place and Hetch-Hetchy Valley.

I do not consider it a hard trip at all if proper provisions are made for it. The scenery, both as to water and rock effects, is extremely gratifying, and the continuous total absence of becivilizing air is even more enjoyable.

I went to Yosemite Valley by stage, to Tioga Road via Yosemite Falls trail, and Indian Cañon by horseback, and thence on foot through to Crocker's via Lake Tenaya, Tuolumne Meadows, Tuolumne Cañon, and Hetch-Hetchy Valley. I was absent fourteen days from San Francisco.

Any one making this trip will find the account in volume I, number 6, of the SIERRA CLUB BULLETIN of 1895 of the greatest value, and a typewritten copy of the essential descriptions and instructions should be carried. Professor Badè's very interesting article in volume V, number 4, of the BULLETIN for 1905 should also be read before going for inspiration and after returning for reminiscences.

Two statements in the former account (I BULLETIN No. 6), however, seem to need a word of explanation, as I was misled slightly by them.

The north side of the river is recommended, but one must use his own judgment in this matter, as it will be found that there are many long stretches on the south side more practicable than corresponding distances opposite on the north side. I made four or five fords a day during the trip, not counting a crossing over a sixty-foot tree-trunk entirely spanning the river above the series of five waterfalls coming down the south wall of the cañon below Return Creek, and another over the flat base of an immense cone-shaped boulder inverted and bridging the roaring stream below Pait Valley.

For these numerous fords I carried a waterproofed canvas bag weighing three quarters of a pound, which, when properly filled with my impedimenta, became a boat, leaving me free to wade or swim.

The trip from Muir Gorge to Hetch-Hetchy Valley is spoken of in the BULLETIN as "long and tedious," whereas I found it delightfully easy compared with what preceded, and in consequence its variety of charms was the more enjoyed. If still sound, I should look with great disfavor upon leaving the cool, trout-filled, down-grade river, with its generous sprinkling of cascades, rapids, long pools, and meadows below Pait Valley, either afoot or on horseback, for the hot, dry climb up the uncertain rocky trail 3,100 feet to the Tioga Road as advised in the BULLETIN article referred to. It was an easy one day's tramp from Pait Valley to Hetch-Hetchy Valley, and another less easy one day's tramp out to Crocker's, full of interest all the way.

The trout in the cañon bit at brown hackle, black fly, and red ant flies morning, noon, or night, but I caught four fish on a No. 0 Wilson spoon at the end of my leader to every one I caught on a fly.

When the grand Kolana Rock of Hetch-Hetchy Valley finally loomed up ahead about half a day out of Hetch Hetchy near the end of my cañon tramp I felt as relieved and delighted as if I had seen at the end of a long ocean voyage the well-known Twin Peaks of my native city, or as the Greeks under Xenophon did when they again beheld their well-loved sea, with the difference that I wanted to remain there indefinitely. It was with keen regret that I left my last camp among the pines, the rapids, the cliffs, the trout, the sunshine, and the other wild and refreshing charms of primeval nature in the Grand Cañon of the Tuolumne.

Very truly yours,

S. L. FOSTER.

MEMORIAL OF THE SIERRA CLUB OF CALIFORNIA TO THE PRESIDENT AND CONGRESS OF THE UNITED STATES IN RELATION TO THE RECESSION OF THE YOSEMITE VALLEY AND THE MARIPOSA BIG TREE GROVE TO THE UNITED STATES BY THE STATE OF CALIFORNIA.

The Sierra Club of California respectfully presents the following memorial to the President and Congress of the United States:

WHEREAS, The Legislature of the State of California has passed "An act [copy appended hereto] to recede and regrant unto the United States of America the 'Yosemite Valley' and the land embracing the 'Mariposa Big Tree Grove,'" which act was duly approved by the Governor of said State March 3, 1905;

WHEREAS, In 1864 the little known and at that time recently discovered "Yosemite Valley" was granted in trust to the State of California by Congress, "to be held for public use, resort and recreation";

Whereas, In 1890 the "Yosemite National Park," entirely surrounding the "Yosemite Valley," was created by Congress;

Whereas, The "Yosemite Valley" embraces but fifty-six square miles, which is situated in the very heart and center of the Yosemite *National* Park, which embraces over one thousand square miles;

Whereas, There has thus been created an "imperium in imperio" which has already given rise to unnecessary friction and expenditures, by reason of the two jurisdictions;

Whereas, Had the "Yosemite Valley" grant not been in existence at the time of the creation of the Yosemite National Park, the idea of carving out of the heart of the National Park a small tract like the "Yosemite Valley" and placing it under a separate jurisdiction would never have been proposed;

Whereas, This illogical situation exists, which is detrimental to the interests of both parks, to remedy which the State passed the act receding the valley in order to place the entire park under one jurisdiction;

Whereas, The "Yosemite Valley" is the natural and strategic, as well as the scenic, center of the National Park, with all its roads and most of its trails leading directly to the valley;

Whereas, The Federal authorities in charge of the National Park will always be hampered in their administration of the National Park until they acquire jurisdiction of the valley;

Whereas, The Yosemite Valley is now of world-wide interest and is "national" in importance, its natural wonders being of such magnitude that they would be better and more appropriately cared for and preserved under national ownership and protection;

Whereas, The Yosemite Valley is not now as accessible to the traveling public as it should be, nor is there sufficient hotel accommodation, nor are there satisfactory roadways and trails within the valley itself;

Whereas, The Federal Government is in a better position to bring about these very desirable improvements than is the State of California, as is evidenced by the magnificent results which have been accomplished in the Yellowstone;

Whereas, The Honorable Secretary of the Interior and all of the recent superintendents of the National Park have strongly advocated the transfer;

Whereas, The State Board of Trade and all of the important local Boards of Trade, Merchants' Exchanges, and Chambers of Commerce throughout the State of California, the American Forestry Association, the California Water and Forest Association, the State Sempervirens Club, The California Club, and The Outdoor Art League have adopted resolutions favoring recession;

WHEREAS, Over one hundred newspapers, including all the leading newspapers throughout the State, without regard to political affiliation, have, by editorial comment, favored recession, while only two were opposed, thus indicating that the people of the State are overwhelmingly in favor of recession;

Therefore, The Sierra Club memorializes the President and Congress of the United States to pass such laws as may be necessary to accept the "Yosemite Valley" and the "Mariposa Big Tree Grove," in accordance with the terms of the said act of recession by the State of California.

JOHN MUIR, *President.*
A. G. MCADIE, *Vice-President.*
J. N. LE CONTE, *Treasurer.*
WM. E. COLBY, *Secretary.*
GEORGE DAVIDSON,
WM. R. DUDLEY,
J. S. HUTCHINSON, JR.,
WARREN OLNEY,
E. T. PARSONS,
Board of Directors of the Sierra Club.

[APPENDIX.]

An Act to recede and regrant unto the United States of America the "Yosemite Valley," and the land embracing the "Mariposa Big Tree Grove."

(Approved March 3, 1905.)

The People of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1. The State of California does hereby recede and regrant unto the United States of America the "Cleft" or "Gorge" in the granite peak of the Sierra Nevada Mountains, situated in the county of Mariposa, State of California, and the head-waters of the Merced River, and known as the Yosemite Valley, with its branches or spurs, granted unto the State of California in trust for public use, resort, and recreation by the act of Congress entitled "An act authorizing a grant to the State of California of the Yosemite Valley, and of the land embracing the 'Mariposa Big Tree Grove,'" approved June 30, 1864; and the State of California does hereby relinquish unto the United States of America and resign the trusts created and granted by the said act of Congress.

SEC. 2. The State of California does hereby recede and regrant unto the United States of America the tracts embracing what is known as the "Mariposa Big Tree Grove," granted unto the State of California in trust for public use, resort and recreation by the act of Congress referred to in section 1 of this act; and the State of California does hereby relinquish unto the United States of America and resign the trusts created and granted by the said act of Congress.

SEC. 3. This act shall take effect from and after acceptance by the United States of America of the recessions and regrants herein made, thereby forever releasing the State of California from further cost of maintaining the said premises, the same to be held for all time by the United States of America for public use, resort and recreation, and imposing on the United States of America the cost of maintaining the same as a National Park. *Provided, however,* that the recession and regrant hereby made shall not affect vested rights and interests of third persons.

BOOK REVIEWS.

EDITED BY WILLIAM FREDERIC BADÈ.

"A GUIDE TO THE STUDY OF FISHES."

President David Starr Jordan of Stanford University is without doubt our leading American authority on fishes. This monumental work* is splendid evidence of his industry, perseverance, and scientific acumen. It is not often that one comes across a work so satisfying in every way. Were it not for the fascinatingly written subject-matter, of equal interest to the technical student and to the angler, a reviewer might be appalled by the size of these two sumptuous octavo volumes. They embrace more than twelve hundred pages, profusely illustrated in white-and-black and in half-tone, and the frontispiece of each volume shows in colors some of the remarkable fish brought by the author from his Pacific explorations. The following titles of chapters, selected at random from the first volume, will indicate the interesting character of the contents: "The Organs of Respiration," "The Organs of Sense," "Instincts, Habits, and Adaptations," "Colors of Fishes," "Fishes as Food for Man," "The History of Ichthyology," "The True Sharks," etc. Even "The Mythology of Fishes" has not been overlooked. Among other things the author, in the last-mentioned chapter, refers to the popular superstitions about mermaids: "In China small mermaids are very often made and sold to the curious. The head and torso of a monkey are fastened ingeniously to the body and tail of a fish." The manufacture of these "curios has long been a profitable industry in the Orient." In a brief discussion of the sea-serpent myths Dr. Jordan, while disposed to regard most of the stories as mere sailors' yarns, or stories resting on incorrect observation, suggests that some of them may relate to real fishes. Thus "the sea-serpent with an uprearing red mane like that of a horse is the oar-fish (*Regalecus*), a long, slender, fragile fish compressed like a ribbon and reaching a length of 255 feet." Very interesting is the photograph of a specimen of this genus (Vol. I, p. 362), stranded on the California coast at Newport, in Orange County. The recently discovered frilled shark (*Chlamydoselachus angineus,* pictured

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* *A Guide to the Study of Fishes.* By DAVID STARR JORDAN. Two colored rontispieces and 936 illustrations. 2 vols.; pp. xxvi, 624, and xxii, 598. Published by Henry Holt & Co., New York, 1905. 8vo. Price, $12 net.

Vol. I, p. 525, *not* 523 as per index) may also be responsible for some of the stories.

But the California angler, among all this wealth of information set forth with such charming clarity, instinctively turns to the two chapters (in Vol. II) on the *Salmonidæ*. Under the subheading "The Trout of Western America" the author presents a masterly discussion of these living arrows of the white water. It is a long list of species that answers to his roll-call. "In the western part of America are found more than a score of forms of trout of the genus *Salmo,* all closely related and difficult to distinguish." Dr. Jordan distributes the various species among three series, the cut-throat trout, the rainbow trout, and the steelhead series. He deems it probable that the American trout originated in Asia, extended its range to southeast Alaska, and thence spread southward. If it is true that the progenitors of a part or all of the aboriginal population of North America came across Bering Straits, or by way of the Aleutian Islands, we would have here an interesting parallel of human to piscine migration. Sierra Club members will be interested to learn that the small-scaled King's and Kern River trout flourish under the name *Salmo irideus gilberti.* This beautiful form of trout therefore is linked with the name of Professor Charles H. Gilbert, of Stanford University, the lifelong associate of the author in the study of ichthyology. During the Club Outing of 1903 the journey to Mt. Whitney was made especially memorable by the famous golden trout of Volcano Creek. President Jordan gives this description of them in his work (Vol. II, p. 99): "In the headwaters of the Kern, in a stream called Volcano Creek or Whitney Creek, the waterfall sometimes called Agua-Bonita shuts off the movements of the trout. Above this fall is a dwarf form with bright golden fins, and the scales scarcely imbricated. This is the golden trout of Mount Whitney, *Salmo irideus agua-bonita.* It will possibly be found to change back to the original type if propagated in different waters."

In the preceding chapter the reviewer has called attention to only a few items of general and immediate interest. Many large questions raised in these chapters must go unmentioned for want of space. Among them is the question which concerns the probable evolution of fishes from some unknown, perhaps lamprey-like, ancestor. There was one class of primitive fishes known as Crossopterygians, of which but two families of few species survive—all of them apparently in Africa. They united within themselves traits of the shark, lung-fish, and ganoid. Our author is of the opinion that from these "Crossopterygians, or their ancestors or descendants by the specialization of the lung and limbs, the land animals, at first amphibians, after these reptiles, birds, and mammals, arose." The publishers have done their part to make the book attractive by the use of heavy paper, generous margins, large print, and, above all, by the general excellence of the illustrations. No modern Isaak Walton can afford to remain without this thesaurus of most varied piscine lore.

W. F. B.

"VOYAGES DANS LES ALPES."

The true Alpinists, lovers of Nature in her primeval beauty and grandeur, seek untrodden trails, and love to taste the triumphs of "first ascents." These will find piquant pleasure in this volume of excerpts from the writings of de Saussure, the early Swiss mountaineer, scholar, scientist, and artist in his depictions of the grandeur, magnificence, and unsophisticated freshness of the European Alps of his day, 1740-1799. This volume has been lately presented to the Sierra Club Library by our esteemed member Harrington Putnam, of New York.

I venture to quote from the critique on this work written by the noted Swiss, R. Topffer, and reprinted in this, the edition of 1852, from the "Bibliotheque Universelle de Geneve," September, 1834:—

"How curious a thing, how strange a destiny that the man who has best known and comprehended the Alps, almost the only one who has sustained their character and grandeur in his style, was a scholar and student, a man of the barometer and hygrometer; and that, among so many artists, so many poets, visiting the same places to sing and paint, not one has been qualified to equal him or to approach him even at a distance.

"De Saussure, who traversed the Alps to study their physics and their natural history,—that is to say, with a serious purpose, mind receptive, and body active,—took as an additional benefaction the charm of the country, the beauties of the wayside, the lively and novel experiences that accompanied his work; and at evening, on his summit, in his cabin content, permeated with it all, he penciled his journal; then, into the pauses of science slipped descriptions, memories, and observations of the day; then a thousand features, true because not sought, picturesque and poetic because they were true, took form under his pen; and without intention he traced a faithful picture, naïve and gladsome, wherein is reflected simultaneously the grand scenes which surrounded him and the impressions which dominated him.

"Do not conclude, however, from what precedes, that it is sufficient to be a geologist or a naturalist in order to be the painter of the Alps; to have a staff in hand, a barometer in pocket. It is not even sufficient to have, as de Saussure, a passion for the mountains, the most pronounced alpine vocation, the body inured to fatigues, the taste to enjoy mountaineering, to make it one's recreation and delight. With all that, one can still write a sorry book; without that, one can write a good one. But to all that

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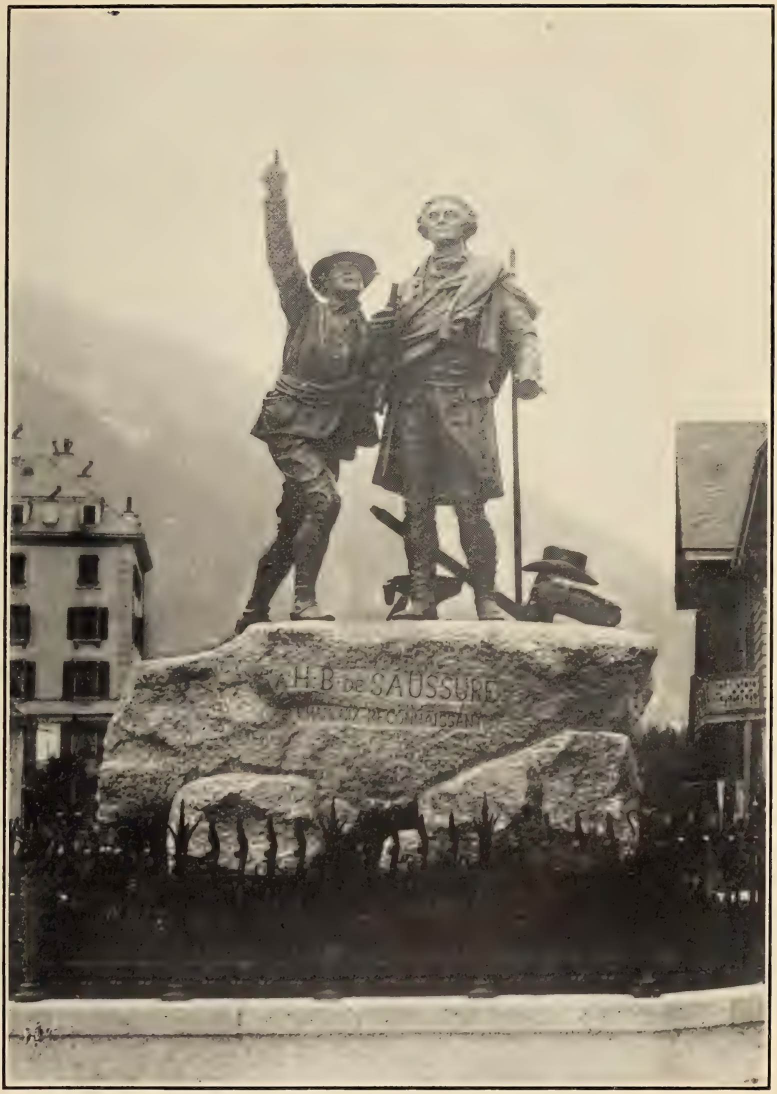
* *Voyages dans les Alpes.* Partie Pittoresque des Ouvrages de H.-B. DE SAUSSURE. Joël Cherbuliez, Editeur. Paris. 1852.


H·B DE SAUSSURE
RECONNAISSANT

MONUMENT TO DE SAUSSURE AT CHAMONIX.

material of his expeditions, if I may so express it, de Saussure united in a high degree the qualities of mind and character which, in all times and on any subject, make a writer interesting and distinguished, those which, both from the form and from the style, attract most the sympathy of the reader, and captivate the best, his attention.

"That which I admire in these pages is that spirit of observation, at once lofty and naïve, grave and good-natured, which comprehends the grand features, and does not disdain the lesser details; that curiosity, philosophical and at the same time gentle and smiling, which finds agreeable food about the rustic homes seated on the flanks of the Mole, as well as grand reflections in face of the icy solitudes of Mont Blanc; that imagination sufficiently rich, sufficiently elevated to find always enough food in the exact reality without exaggerating the beauties, without transforming the accidental into phenomena, the curious things into marvels, the singular into a miracle.

"But with de Saussure the love of truth dominates and tempers the most brilliant faculties, and in his description and poetry is displayed the same fidelity, the same candor, as in his science—a thing very rare, a phenomenon very curious, unique with him.

"That which interests me in these pages, in addition to the traits I have already remarked, is an undefinable vigor, simple and mature, displayed in the habits, in the tastes, and in the methods of the traveler. That scholar, rich, accustomed to the good things of life, as soon as he approaches his cherished mountains grasps the knotty staff, relies on his seasoned muscles, becomes a man of Chamouni, and in a country without hotels and without resources adopts without disdain, with pleasure, the rustic food and the rough shelter of his companions which he has chosen. There is enough pure, active, elevated pleasure to recompense him for some privation. He knows moreover the grand secret that all know, but that few put into practice: appetite is in the heights; repose, soft, sound, and sweet, is in the heights; it is only necessary to go there to seek them. If it is noble to know enough to prefer intellectual enjoyment to the ease of a life of wealth, it is also noble to know how to exchange lazy recreations for laborious pleasures. Since de Saussure the trails are mapped out, hotels are opened even on the summits, mules and litters have penetrated everywhere, and the grand secret, preserved with the initiated few, is lost for the general.

"That which pleases and delights me is to see a man unlike myself, a superior intellect, recreate himself in my way, an illustrious scholar enjoy the things that please me, and, in thus placing himself in my class, sanction my manner of enjoyment. Even more,—it is possible to learn from a guide so distinguished how to travel, how to observe, how to interest one's self, how to find in Nature so many charms, so much grace, so much freshness, so much mystery; how the discovery of an alpine plant which blooms isolated at the edges of the eternal snows moves and rejoices as much and more than a spectacle obtained at great expense.

"As for me, what I say here is less the praise of its truth than of its information; and for fifteen years that I have gone to the mountains to greet the glorious days I have taken there to enjoy only the little I have been able to grasp in this book, and that little has been for me a great wealth.

"What I love in these pages, what attracts me to their author, is the sentiment of benevolence and humanity which always animates de Saussure toward the poor mountaineers among which he lives; that gentle and cheerful goodness with which he meets those people, excusing their prejudices, compassionating their harsh fatigues, appreciating the excellent qualities covered by their coarse exteriors. He converses with his guides, he interests himself on their behalf, he makes himself their friend, he does not consider that mere money pays for the respect, the devotion, the affection of those simple hearts who give themselves to him. Nobility as true as rare, token of an admirable soul, of a sane heart, of a character upright and good.

"These things move me, for they have become rare, if they were not always so. For so many who are merely rich the pride of wealth alone is enough to make them exacting, harsh, and haughty toward the poor people they employ; but this man, rich too,—and more, a scholar,—and more, celebrated,—found it easy to be the friend of those who loved him, and on the mountains to be the equal of mountaineers.

"Finally, that which distinguishes these pages, that which will place them always at the head of all that have been written on these particular regions, is the charm of novelty, the force and movement of discovery. The fresh, pure color of a still virgin nature is there felt throughout. And this charm one only can perceive and describe who, as de Saussure, is the first to penetrate unknown valleys; the first to there discover magnificent treasures reposing since the creation, surprising among remote peoples antique ways, touching customs, a thousand naïve traits, already tarnished when noticed, lost when admired, and which certainly it is useless to seek to-day in these beautiful valleys."

E. T. P.

"THE PRINCESS PASSES."

A charming novel of travel in the Alps is *The Princess Passes,** by C. N. and A. M. Williamson. In its early chapters one renews acquaintance with the famous "Lightning Conductor," his automobile and his wife. Later the hero of this book, Lord Lane, combines a walking trip across the Saint Bernard Pass and into Chamounix, with a love-story rather suggestive of "Twelfth Night" in some of its complications.

To one accustomed to mountaineering, some of the hardships and perils described will have an effect very different from what the authors intended. The picture of the pedestrian who finds it "impossible to improvise a dressing-room in the neighborhood of the pump" for the putting on of a clean collar would be amusing if it were not pathetic; and the ardors of the climb of Mont Revard would seem very awe-inspiring if we had not a gauge of its difficulty in the ease with which the muleteer gets his beasts to the summit.

One interesting aspect of the book is the association of historic scenes with the mountains—an association which plays so large a part in the charm the very name of the Alps has for us. "St. Bernard had me at his feet and held me there," says Lord Lane. "This strange, unkempt Pass, this Great St. Bernard seemed a secret way back into other centuries, savage and remote. . . . There was the old Roman road along which Napoleon had led his staggering thousands. . . . Farther and farther back into the land of dead days I journeyed with St. Bernard, and helped him found the monastery which the eyes of my flesh had not yet seen."

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* *The Princess Passes.* By C. N. and A. M. WILLIAMSON. Henry Holt & Co., New York. $1.50.

This volume, presented to the Club library by Mr. E. T. Parsons, will be found to be very entertaining reading. M. R.

"A HANDBOOK OF THE TREES OF CALIFORNIA."

A book that will be welcomed by members of the Sierra Club is Miss Eastwood's *Handbook of the Trees of California,*[*] a recent publication of the California Academy of Sciences. The first issue includes a special edition of "five hundred copies, numbered and signed by the author." On previous occasions Miss Eastwood has placed students of California's diversified flora under obligation by the published results of her work. One of these appeared as No. 27 among the Sierra Club's publications in 1902, and was entitled "A Flora of the South Fork of King's River." This proved so useful to botanically interested members of the two Sierra Club outings to the King's and Kern River cañons that they will not be slow to avail themselves of this new aid to their studies. It is a popular but scientifically accurate vade-mecum. As the title indicates, it limits itself to the *trees* of California, but this limitation has the advantage of enabling the author to bring the whole State within the scope of a conveniently portable manual. A striking feature of the book consists of a profusion of finely executed half-tone plates, many of them made from drawings left by Dr. Albert Kellogg. These illustrations cannot fail to be of great assistance to the amateur student. Naturally Miss Eastwood was obliged to make the rather difficult distinction between a tree and a shrub. Among California shrubs there are many ambitious candidates aspiring to rank as trees, and not a few of the arboreal aristocracy have fallen from their quondam estate through progressive change of environment. To quote the author, "In general a tree differs from a shrub in having a distinct trunk some distance above the ground, and in being not less than fifteen feet high. Where the species is only rarely a tree and generally a shrub it has not been included, so that many species of *Ceanothus,* many of the manzanitas, the sumachs, and many others have been omitted." (Here is room for another manual.)

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[*] *A Handbook of the Trees of California.* By ALICE EASTWOOD. Published by the California Academy of Sciences. No. IX. San Francisco, 1905. For sale at Robertson's, Elder's, and elsewhere. Price, paper bound, $2; leather bound, $2.50.

In a few pages of pithy introductory discussion the author rightly emphasizes the beauty, variety, and grandeur of California's forest vegetation. The fame of the State is in large measure the fame of her "Big Trees"—the first interest of the tourist and sojourner. But who could overlook the eighteen species of pine described in text and illustration, or even such beautiful rarities as the mountain mahogany and *Lyonothamnus* of Santa Catalina Island? A most valuable feature of the book is the author's key to the families of the trees. With this, as well as two additional keys based upon the fruits and leaves respectively, it ought to be no difficult matter for any lover of trees to determine the identity of a species.

W. F. B.

Annual Report of the Smithsonian Institution. 1904.

The Club library is in receipt of a copy of the *Report of the Smithsonian Institution for 1904.* Among many interesting articles, special mention should be made of one by Douglas W. Freshfield, entitled "On Mountains and Mankind." It is a fresh and suggestive discussion of the fascination which mountains have exerted over the mind of man from the earliest times. In the original form the article was an address delivered before the Cambridge Meeting of the British Association in 1904.

W. F. B.

FORESTRY NOTES.

EDITED BY PROFESSOR WILLIAM R. DUDLEY.

THE YOSEMITE. The last Congress took no formal action accepting the responsibility and management of the tracts known as the Yosemite Valley and the Mariposa Big Tree Grove, which were returned to the United States by the action of the late California Legislature. President Roosevelt and the Forestry Service have been thoroughly in sympathy with this movement to consolidate the management of the lands in the vicinity of the Yosemite. The former, therefore, in his annual message to the present Congress in December, made the following recommendations:—

"I call your attention to the generous act of the State of California in conferring upon the United States Government the ownership of the Yosemite Valley and the Mariposa Big Tree Grove. There should be no delay in accepting the gift, and appropriations should be made for the including thereof in the Yosemite National Park, and for the care and policing of the park. California has acted most wisely as well as with great magnanimity in the matter. There are certain mighty natural features of our land which should be preserved in perpetuity for our children and our children's children. In my judgment the Grand Cañon of the Colorado should be made into a national park.

"It is greatly to be wished that the State of New York should copy as regards Niagara what the State of California has done as regards the Yosemite. Nothing should be allowed to interfere with the preservation of Niagara Falls in all their beauty and majesty. If the State cannot see to this, then it is earnestly to be wished that she should be willing to turn it over to the National Government, which should in such case (if possible, in conjunction with the Canadian Government) assume the burden and responsibility of preserving unharmed Niagara Falls; just as it should gladly assume a similar burden and responsibility for the Yosemite National Park, and as it has already assumed them for the Yellowstone National Park. Adequate provision should be made by the Congress for the proper care and supervision of all these national parks. The boundaries of the Yellowstone National Park should be extended to the south and east to take in such portions of the abutting forest reservation as will enable the Government to protect the elk on their winter range."

The Secretary of the Interior in his report also strongly recommends the acceptance of the retroceded tracts as follows:—

"Aside from the objections which are inseparable from a disputed and divided jurisdiction over an area which naturally forms but one great park, the necessity for the establishment of a suitable and convenient post or camp for the troops; for the adoption of a comprehensive system of patrols in the valley and the park; for the protection of both parks against destructive fires; the construction of an adequate system of free public roads leading to the valley; the building therein of ample hotel and other accommodations for visitors, as well as the safe-guarding of the valley from the granting of unwise and extravagant concessions—all these things seem to call imperatively for immediate action on the part of the National Government; and I cannot too strongly urge upon Congress the importance of at once adopting measures which will set at rest any question as to the purpose of the United States to accept the retrocession by the State of California of the Yosemite Valley and the Mariposa Big Tree Grove, and thus preserve the entire country embraced in these parks for public use and recreation forever.

"It is further recommended that, for administrative purposes in the management of the Mariposa Big Tree Grove, a parcel of land of approximately one mile in length and two miles in width, immediately south of the Yosemite National Park and abutting the Big Tree Grove on the north, be included within the metes and bounds of the Yosemite National Park and made a part thereof."

It would be quite appropriate to also bring the Fresno Big Tree Grove, some miles south of the Mariposa Grove and over the Mt. Raymond divide, under the same management.

Early in December Senator Perkins of California introduced into the Senate a bill embodying the recommendations of the President regarding the Yosemite.

FOREST RESERVES. In the August number of *Forestry and Irrigation*, A. F. Potter, of the Forestry Service, summarizes the present extent of the California forest reserves, the work being done upon them, the amount of grazing allowed, and the character of the new reserves added since January 1, 1905. The old reserves, chiefly in the mountains of Southern California and along the Sierra Nevada from Lake Tahoe southward, amounted to less than 10,000,000 acres. The new California forest reserves are six in number, are located in Northern California, and swell the total amount in the State to 14,250,000 acres. Mr. Potter states that this is "an acreage almost double that included in any other State or Territory. There still remains withdrawn from entry a large area from which it is probable several additional reserves will be created, so that ultimately the National Forest Reserves of California will include about 16,000,000 acres of land."

The general situation of the new reserves was given in the pages of the BULLETIN in the numbers for February and June, 1903. The land had then been recently withdrawn from sale and entry preparatory to expert examination, and the reserves were intended to protect the head-waters of the Sacramento and its tributaries and the Klamath and its tributaries. Of these reserves the Modoc and the Warner Mountains reserves are in the northeastern part of the State, the Klamath and Trinity reserves cover portions of the watershed of these rivers respectively, while the Plumas and Lassen Peak reserves occupy the northern extension of the Sierra Nevada and the southern part of the great lava region in Plumas and Lassen counties. A seventh, the Mt. Shasta Forest Reserve, twelve townships from Mt. Shasta southwestward, was created in October, 1905. The boundaries of these reserves "have been drawn so as to include only lands suited to forest reserve purposes." The bitter opposition in 1902 to the proposed reserves will be recalled perhaps. It was apparently local, but was probably wholly due to the paid agents of certain lumber interests foreign to California, which were interrupted in their plans, already well advanced, for rapidly monopolizing the valuable stands of timber in Northern California through misuse of our several unfortunate land laws. The movement of capital from the exhausted white-pine land of Minnesota to Northern California was begun as early as 1899. The writer, who had traveled through these forests in that year, endeavored to interest the Interior Department in a reservation of the public forest domain from Nevada County northward to include the head-waters of all the Sacramento tributaries. A resolution to that effect was accepted and adopted in the meeting of the American Forestry Association, which met at Los Angeles that year, but the right time to check the vast amount of fraudulent acquirement of these lands by Eastern lumbermen passed without any movement on the part of Binger Hermann, then Commissioner of the General Land Office, now under indictment for conspiracy with minor land speculators to defraud the United States; and it is difficult to see how any of the forest land now included in at least four of the Northern California reserves could have been saved from private greed, except for the opportune interest and action of President Roosevelt in 1902. That these private interests have attained a powerful hold on Northern California, and that their influence is a thing to be constantly reckoned with, is evidenced by the protest of State Mineralogist Aubury to the General Land Office, published in December, 1905, stating that an effort is now being made at Washington, through the agents of these few land monopolists, to have seven townships segregated from the reserve in Plumas County. It also states that the work of acquiring an enormous amount of small holdings, evidently for timber purposes, through a fraudulent use of the placer-mining laws is still being carried forward by an old offender, H. H. Yard. As an illustration of the extent to which the land laws have been turned to a use not at all intended by their framers, it is stated that in seven Plumas County townships the property of the settlers and miners amounts to only 19,244 acres, as against 34,094 acres claimed to have been acquired under the land laws in two years by a few land speculators. Among them are Thomas B. Walker, conspicuous since 1898-1899 in such enterprises in Northern California, and William E. Wheeler. These few men have continued their operations with particular tenacity in Plumas County on account of the expected enhancement of timber-land values after the completion of the Western Pacific Railroad. Whatever the outcome, Messrs. Aubury and Edman deserve well of the public in voicing vigorously the injury done the real miner by these monopolistic encroachments. If there is fraud in the method of the acquirement, their protest may result in an investigation on the part of the Government such as has been successfully inaugurated during the past year in Oregon.

Other States have also been favored in the establishment of new forest reserves, until we now have over 100,000,000 acres set aside under this head in the Western States and Territories.

In October of the present year 343,000 acres were withdrawn from the public domain in the heart of Monterey County, in preparation for the proposed Santa Lucia Forest Reserve. It has been already pretty thoroughly inspected. It concerns the water supply of the Carmel River and of the Arroyo Seco and other streams contributory to the Salinas Valley water supply.

REFORESTATION. The zeal of the United States Forestry Service since the reserves were placed under their supervision by the last Congress has been displayed in many pieces of work but little known to those who do not read the forestry journals and the Service publications. In no direction has it been more active than in experiments in reforestation of denuded or chaparral areas in the semi-arid States. In California this work has been chiefly confined to the south, where thousands of pine seedlings have been planted; but reforesting has been undertaken near Mt. Shasta. In Colorado, New-Mexico seedlings are being raised by the million for this purpose. Experts have been brought from the English service, where reforestation has been practiced for a long time, and the subject of replanting the denuded areas in the California reserves has been taken up with the President by Senators Perkins and Flint.

STATE FORESTER. The Governor of California appointed Edward T. Allen as State Forester under the new Forestry Law. He took up his new duties in July. The appointment was made with much care and has everywhere been well received. He was long familiar with the forests of the Pacific Coast, his father being a well-known naturalist living for many years in the vicinity of Mt. Rainier. He is a trained forester, as the law requires, and was taken from the United States Forestry Service, when appointed to his present position. He no doubt has a great opportunity; but the people of the State have a greater one, and an even greater duty, in sympathetically aiding and supporting their Forester.

PUBLICATIONS. The American Forest Congress in January, 1905, was a remarkable gathering in many ways. It was one of the very few gatherings of specialists when a President of the United States has entered the assembly as a speaker. The proceedings of the Congress have been published in a single volume by the American Forestry Association.

While *Forestry and Irrigation,* the organ of the American Forestry Association, is perhaps well known to may readers of the BULLETIN, probably few see the *Forestry Quarterly,* a journal largely for the professional forester, but containing many articles of a non-professional character. In number three of this year Mr. E. A. Sterling gives an account of forest legislation in California. He finds "that the recently enacted forest legislation in California is the nearest approach to a model forest code yet made and furnishes a foundation for a more perfect system than has been inaugurated in any State." The *Quarterly* has many reviews of articles and books relating to forestry both in America and in foreign countries. Dr. B. E. Fernow is the editor-in-chief, and Professors Graves, Fisher, and Roth, respectively the heads of the forestry instruction at Yale, Harvard, and Michigan, are upon the board of editors. The journal is two dollars a year, and published at Ithaca, N. Y.

REPORT ON THE KING'S RIVER REGION
REVISED BY-LAWS OF THE SIERRA CLUB
IN THIS NUMBER

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All communications intended for publication by the Sierra Club, and all correspondence concerning such publication, should be addressed to the Editor, Elliott McAllister, 402 Union Trust Building, San Francisco, California.

Correspondence concerning the distribution and sale of the publications of the Club, and concerning its business generally, should be addressed to the Secretary of the Sierra Club, 2901 Channing Way, Berkeley, California.

THE MATTERHORN.

SIERRA CLUB BULLETIN.

VOL. VI. SAN FRANCISCO, JANUARY, 1907. No. 2.

AN ASCENT OF THE MATTERHORN.*

BY WILLIAM FREDERIC BADÈ.

It was a sultry July day as my young friend Irving Cockroft and I walked into Stalden sur la Viege. There really were three of us, for on the top of the Col de Balme we had fallen in with Herr Elkuss, of Berlin, who, under a shock of gray hair, had preserved a sturdy frame, a cheerful mind, and all his youthful fondness for Alpine trails. We had footed it together to Martigny, taken rail for Viege, and had trudged up the foaming Visp to Stalden. It was noon and very warm. After a generous lunch we went to the station to wait for the queer little train, drawn by a species of Abt locomotive, that during the tourist season daily snorts its way up a sinuous and often steeply inclined track to Zermatt. On the station platform I noticed an individual who by various unmistakable characteristics proclaimed himself a Swiss guide. Our own quest and identity did not escape his practiced eye, for he immediately offered his services. Perhaps long acquaintance with the average tourist, or the presence of our elderly friend, suggested to him the unfeasibility of a strenuous undertaking. He wanted to know whether he might not lead us up the Breithorn (altitude 13,685 feet). This is the easiest of the many climbs undertaken from Zermatt by tourists, and Alpinists have therefore contemptuously dubbed it the "Damenhorn" (Ladies' Horn). Herr Elkuss resented the suggestion with a snort of disgust and an allusion to this fling. The guide immediately perceived that he had begun climbing up the wrong chimney, and made haste to come back. He averred that he was ready and able to climb any mountain in the Alps. But Herr Elkuss assured him that he was not looking for any trouble among the precipices, and I was not anxious to engage a man who solicited patronage so far from his base of operations. By mere chance I asked him to give me his name. It was Alexander Burgener, a name I immediately recognized as illustrious in the annals of Alpine mountaineering. The senior Burgener, still active as a guide, made several difficult first ascents, among them that of the Aiguille du Dru. Our interlocutor was Burgener Junior, the eldest son of the former, who also holds an enviable record as a cautious and expert guide. His home is at Stalden, and he was on his way to Zermatt when he met us at the station in Stalden. The more I conversed with him the more I liked him, and before we reached Zermatt had engaged him for a few days of climbing.

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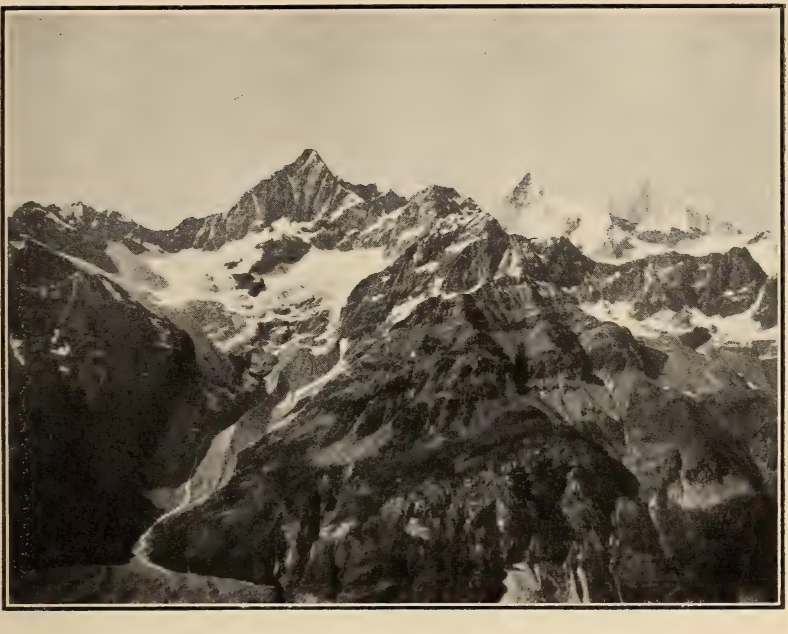
* July 20, 1905.

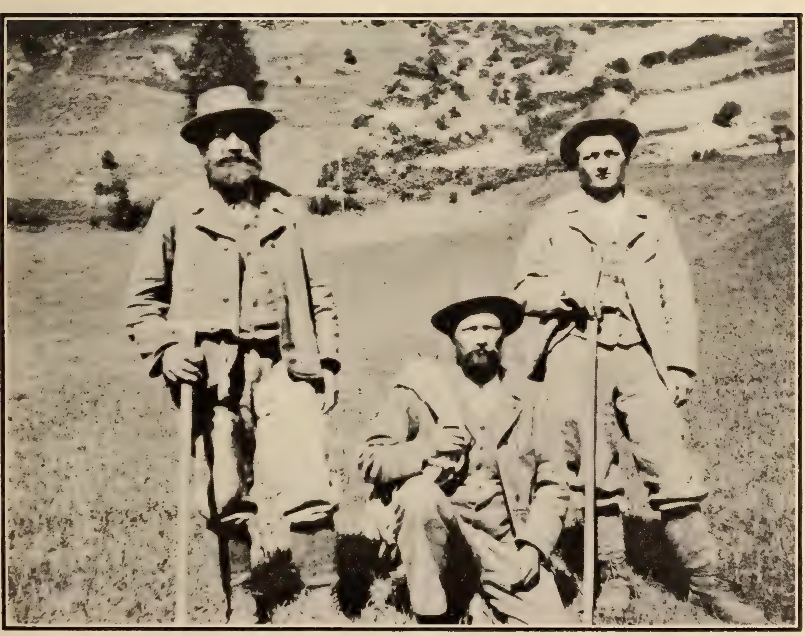
During the afternoon of the next day we set out for the Fluhalp *auberge,* intending to climb the Rimpfischhorn for practice. Cockroft had had little experience in mountaineering, and it was deemed desirable to let him try himself out before attempting the much more difficult ascent of the Matterhorn (altitude 14,705 feet).

The altitude of the Rimpfischhorn is 13,790 feet. In the course of its ascent one encounters a variety of climbing over snow, glacial ice, loose rocks, and some precipitous cliffs. While much more difficult than the Breithorn, there is nothing in the ascent of this mountain which a skillful mountaineer would call difficult. Toughened by several days of strenuous footing over high passes, we found the conquest of the Rimpfischhorn easy, and returned in prime condition.

Burgener, who felt that a change of weather was impending, urged that we rest a day before starting for the Matterhorn. But I insisted on starting the next afternoon, for I was due to sail from Rotterdam at the end of the month and did not want to take chances on disarranging my programme. A spell of bad weather sometimes lasts a week in the Alps, and the guides do not like to start for the *cabane* or Alpenhütte on the Hörnli when the weather is unsettled. I felt that it was better to get Burgener and David up to the cabin at once, so that even if we had to weather a storm there, we could take advantage of the first fair day that came. From Zermatt one has to reckon on two days for the ascent; from the Alpine cabin it can be done in one day. Our counsels prevailed. We laid in a good stock of provisions, had our shoes restudded with a formidable armament of nails, took an additional new rope, and then started for cloudland. During our stay at the hotel we had not mingled much with American tourists. On the register we simply signed the last place from which we had come, and at the table we talked French or German, whichever the occasion suggested. Our Alpine costume helped to complete our disguise, so that several times we were treated to amusing discussions of our identity in good American vernacular. But soon after our return from the Rimpfischhorn, either through the guides or through the head waiter, from whom we obtained a variety of things for the trip, the news leaked out that we were Americans and that we had come to scale the Matterhorn. Immediately we became objects of interest to the Americans at the hotel. They waylaid us in the hall after dinner, and we, *nolens volens,* had to hold a reception. Cockroft, on account of his youth, became an object of envy and admiration to several lads in the crowd, who afterwards accompanied us for an hour on our way up the Hörnli. But soon their talk gave out and their breath also, and they turned back to the little village over which the westering sun began to throw the massive shadows of the Gabelhörner. The Matterhorn wore a great white kaftan of clouds. By the time we reached the Schwarzsee Hotel it began to rain. We stopped there for a little while to buy additional provisions and some wood for fuel. Then we struck out again into the twilight and the rain. Our path soon led along a narrow ridge of rock with precipices on both sides. It was slippery and we had to pick our way with care. Burgener and David were sent ahead to prepare our supper and to look after our comfort for the night, while we came along more leisurely, enjoying the sublimity of the surroundings. At last we sighted the welcome beams of a light in the window of a firmly built stone lodge. Under ordinary circumstances it would not have afforded much comfort. But up there in cloudland the rickety and fuming old stove in the corner, the straw-covered platform, and the loosely hung door, seemed to enfold a world of comfort. Outside the storm raged with increasing fury. Snow, sleet, and rain beat down upon our shelter, sending us deeper and deeper into the blankets. We were not alone in the hut. An old Italian guide, who needed no further touches to play the rôle of bandit, had preceded us with his Signor. We kept the partition between us and them. To attempt the ascent the next day (Wednesday) was out of question. The storm continued and heavy clouds obscured the summit of the Matterhorn. It was a most impressive thing, during a few sunlit hours of the day, to watch cannonades of rock come down the east face and bound out with a fearful roar upon the Furggen Glacier. Rocks acquire frightful momentum on the sides of the Matterhorn. During a part of the way their path from a distance is visible only by the puffs of smoke that rise where they strike. At night they leave a long trail of fire. This and the infernal noise which accompanies them leave no doubt in the mind of the ignorant Swiss peasant that the devil beguiles his leisure moments by sliding down the face of the Matterhorn. Amid such diversions, including a magnificent display of cloud-forms, the day wore away, to be succeeded by another night of wind and storm. Fortunately we had slept a good deal during the day, for our slumbers that night were rudely broken by the arrival of a party under the guidance of Alexander Burgener, Senior.



OBERGABELHORN, ROTHHORN, AND WEISSHORN.
FROM MATTERHORN, AT AN ALTITUDE OF ABOUT 12,500 FEET.



THE BURGENERS—FATHER AND SONS.
(ALEXANDER BURGENER, JR., IN THE MIDDLE.)
From photographs by the Author, 1905.

Very early on Thursday morning, July 20th, Burgener was out sniffing the weather. It still looked ominous. There was a high wind, and cloud-wracks, driven with great velocity, almost combed the ledge on which the cabin stood, then dashed up against the towering mass of the mountain, like breakers against cliffs. There was a chance that the weather might clear, and we decided to trust to luck and take the risk. David packed up our lunch, consisting of wine, tea, some meats, and various condensed foods usually taken by mountaineers. I took my camera, a small flask of rum, and a few small articles. Burgener, carrying a new rope and rucksack with some lunch, led the way into the night, for the dawn was scarcely beginning to break. Not far above the cabin we struck the northeast arête. Here we roped ourselves together securely. Cockroft was placed immediately behind Burgener, then came David Andenmatten, and I brought up the rear. After worming our way along narrow ledges, up and around several sharp corners, we struck out upon the east face. Dimly visible beyond the rim of the precipice, far beneath us, yawned the bergschrund of the Furggen Glacier. From a point not far above where we were Dr. William O. Mosely, of Boston, had fallen in 1879. We found no difficulty at this early hour in traversing the Great and the Little Couloir, two funnel-like depressions, through which the rocks, quarried by frost and wind on the cliffs above, go bounding with fearful momentum to the glacier below. The guides are in great dread of these places, for no skill in climbing can avail against cannonades of rocks. Several persons have in recent years lost their lives in the Great Couloir. Silently, steadily we picked our way up the east face of the mountain, not very far from the northeast arête, and edging toward it more and more as we reached a point about one third of the way up. To this point the climbing could not be called difficult. What from a distance looks like a smooth, unclimbable surface is really considerably rifted and corrugated, affording good foot- and handholds. On the other hand, what from afar looked like easy stair-form ledges often proved to be very disagreeable projecting terraces of more than a man's height. By the same magic of proximity small white patches became hanging fields of hard-frozen, granulated snow, on which every step had to be cut with care. Furthermore, even in the relatively easy places one is never quite unconscious of the sharply descending slope, which on any part of the Matterhorn calls for a cool head and steady nerves. Constant circumspection is the price of life. Being the rearmost, I deemed it wise to watch also the spaces above me. Even the most careful climbers sometimes dislodge rocks. We were going up a somewhat difficult chimney, when suddenly, before Burgener's ejaculation could reach my ear, I saw a rock of about a foot diameter falling directly toward my head. I instantly dodged at the risk of slipping, and not a moment too soon, for I felt the eddy of air the dread messenger was carrying in his wake, and smelt the sulphur of the first contact as it struck with a crash behind me and went bounding into the abyss.

Halfway up climbing became more difficult. We now kept well to the arête. The sun began to break through the clouds and to dissipate the fog-banks through which the summits of the higher peaks appeared like islands. The strong wind was a great obstacle. It swept across the Matterhorn Glacier and up the almost perpendicular north side of the mountain, then spilled itself over the edge of the arête with a momentum that at times threatened to lift us into the air. Yet for several rod-lengths the arête formed the only practicable ascent. It was barely two feet wide in places where the wind had combed the snow of the previous day into a ridge. On the crest of this ridge we moved along the edge of the awful precipice that ends in the crevasses of the Matterhorn Glacier, two thousand feet or more below. When old Burgener was cutting steps above us, the wind would lift great chunks of ice and snow, toss them about like feathers, and drop them in uncomfortable fashion about our heads. Cockroft had the misfortune to receive a cut on the cheek. Alpine crows also allowed themselves to be tossed about by the wind in such fashion that we sometimes dodged involuntarily, thinking rocks were coming down. The climbing now became more and more difficult as we neared the shoulder. Most of the time we found ourselves spread-eagled against the cliffs with seemingly endless space under our feet. About halfway up, on a narrow shelf, a brief halt was made in order to lighten David's pack of provisions. A mixture of wine and tea was found very refreshing, and a good part of the food we had brought went to appease our appetites. In a few minutes we were climbing again. I tried to use my camera several times, but found that, even in the most advantageous positions, I had to cling so closely to the mountain-wall that no good photographs of the precipices could be secured. Arrived at the shoulder, we divested ourselves of all but the most necessary impedimenta, for now came the tug of war. From this point the ascent is usually made on the north side of the mountain. This remaining stretch of seven hundred feet is the most nervous part of the whole climb. The impression of perpendicularity one gets of this portion of the mountain, when scanning its precipices with a powerful glass from the Zermatt side, is more than borne out by experience when one hangs by the ends of one's fingers and toes over an abyss that yawns between the climber's heels through nearly a mile of blue space.* In the more treacherous places ropes have been swung from iron bars sunk into drill-holes. They serve to give a little confidence to the timid, but must be used with caution, because it is impossible to tell to what extent frost, lightning, and avalanches may have weakened them.

It should be observed that most persons who venture to climb the Matterhorn in these days become mere baggage in the hands of the guides, who wisely insist on going in pairs with every inexperienced climber. Inasmuch as the guides cannot collect the full tariff of a hundred francs ($20) each if they do not get their man to the top, and since it is also a matter of professional pride and future patronage with them to succeed, they do not hesitate to push and drag their man to the top, so long as he can be induced to move. Many a one who has been on the summit of the Matterhorn has gone there in spite of himself, and with the feeling of a victim that is led to the slaughter. I saw one young German that day, evidently a tyro at mountaineering, who would have been willing to mortgage his hope of salvation to be safely in Zermatt again. On the way down he became so terrified that one of his guides threatened to brain him with an ice-ax if he did not move on. It gave the poor fellow at least the courage of anger. Now he doubtless is among those who levy a high toll of admiration for a daring bit of mountaineering, though he confessed freely in the evening that it was the first and last mountain he would ever climb. *Audendo magnus tegitur timor.*

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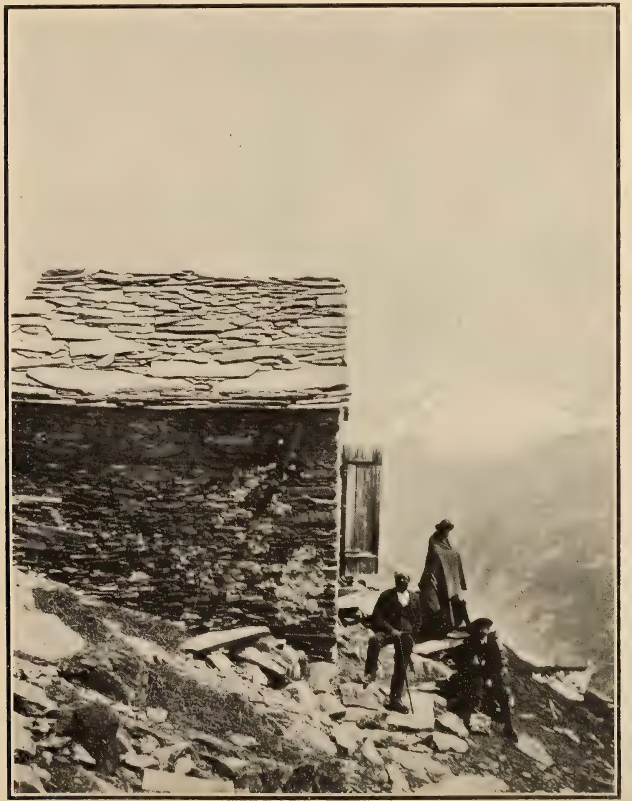
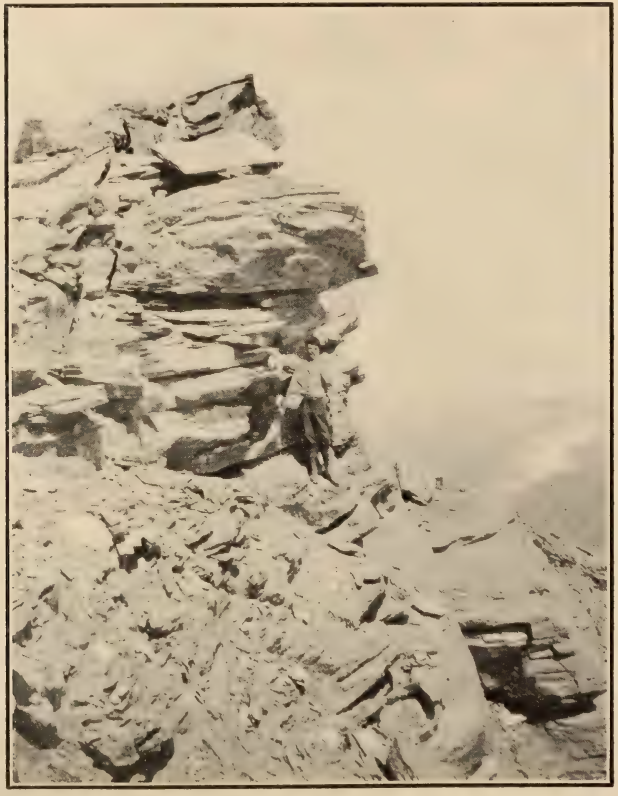
* The character of this precipice may be inferred from the fact that stones drop more than 1,500 feet before they strike the side of the mountain, and those which roll from above and bound out fall to an even greater depth before they make their first contact. At the bottom they land as much as a thousand feet beyond the base of the mountain.

We were at an altitude of 14,000 feet as we turned to the north side of the mountain at the shoulder. The height and the isolation of the mountain exposed us to the full force of the wind, which had reached a high degree of velocity. Rocks and chunks of ice were constantly being torn loose and went bounding past us into bottomless space, like things possessed. No wonder that before the fateful first ascent the simple folk of the mountains believed this dizzy summit guarded by demons. It was bitterly cold. Our gloves were in shreds and we could feel the skin of our hands freezing to the rocks during those momentary halts when Burgener was cutting another step or two in the congealed snow with which the storm of the previous day had filled every crevice. Our rope now was kept taut to minimize the effect of the slightest possible slip. "Stehen Sie fest," would come



SWISS ALPINE CLUB CABIN ON HÖRNLI RIDGE.
(ERECTED 1899.)



WHERE HÖRNLI RIDGE JOINS MATTERHORN.
(FINDELEN GLACIER IN DISTANCE.)

From photographs by the Author, 1905.

Burgener's voice from above a jutting shelf some forty feet above our heads. "Jetzt," would come the answer. Then one of the middle men would swing out over the abyss while the rest of us hugged and gripped the rocks to save him and ourselves if he slipped. The rock on the north face, or roof, of the Matterhorn is rotten and crumbling. Loose fragments, half-imbedded in ice and snow, offered tempting but treacherous handholds. The rope had to be watched constantly, that it might not catch in a crevice and jerk the climber backward at the very moment when he was scaling a difficult place. It was from this sharp slope, not far from the summit, that Michel Croz, Messrs. Hadow and Hudson, and Lord F. Douglas* fell to their death down a mile of awful precipices. These last few hundred feet of the Matterhorn try the endurance even more than the skill of the climber, because the supreme test of nerve and muscle comes at the end of a most trying and continued climb.

At about 10:30 A. M. we stood upon the summit,—a long narrow knife-edge, covered with snow through which rocks protrude here and there. It was so narrow in places that persons passing each other acted like boatmen trying to change places in a canoe on treacherous water. On the Italian side an immense snow cornice projected into space, ready to plunge downward with any one rash or insane enough to set foot on it. On the north side a gentle slope led to the edge of the awful precipice before mentioned. This slope must have been a rod or more in length in some places. But because it seemed to dip into bottomlessness not far from where we stood, no one manifested the slightest inclination to perambulate on it. The summit must look very different now from what it did when Edward Whymper first saw it in 1865. Frost and sunshine, rain and storm, are continually chiseling it into new forms. This, of course, means that the summit is constantly being lowered. At first I regretted that I did not have with me a Sierra Club register. But I doubt whether any records kept up there would be safe from one year to another. Lightnings constantly play on the summit during storms, and soon demolish any metal object left up there.

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* July 14, 1865. First ascent. Edward Whymper and the two Taugwalders alone survived. The body of Lord Douglas was never found.

By 10 o'clock the clouds had cleared away. The air had been washed clean by the rain, and we looked forth, as from the car of a balloon, upon an infinitely variegated world. Northward the central Pennine Alps crowded the foreground. The valley of Zermatt, so immense to the tourists who throng its hotels, seemed a very insignificant depression at the foot of the mountain. About fifteen miles northwest of us, in an air-line, towered the Mischabelhörner with their massive entourage of glaciers and lesser peaks. Southward the green valley of Valtournanche sloped down into the highlands of northern Italy. The whole of Switzerland, with Alps piled upon Alps, seemed to be lying at our feet.

But there was not much time to enjoy the view. A piercing cold wind that swept the summit urged us to begin the descent. David had shown some symptoms of mountain sickness during the ascent. It was deemed wiser, therefore, not to give him the lead. After a brief parley it was decided that I should lead off during the descent, Burgener bringing up the rear. The distance from the summit to the shoulder required care. The wind had already obliterated our tracks so that I had to cut new steps in many places. To find the descent more difficult than the ascent is not an uncommon experience among Alpinists. It was ours also, especially down the sharp, icy slope of seven or eight hundred feet from the crest to the shoulder. In going down one is more vividly conscious of the precipices on account of the necessary centering of one's attention on things below. It was between noon and 1 o'clock when we arrived at the shoulder. A flask of brandy left there on our way up put David thoroughly on his feet again. But I kept the lead during the rest of the descent, which by comparison was relatively easy. The sun became our greatest enemy now. Rocks pried loose by frost, and insecurely imbedded in ice and snow during the storm, left their moorings and went careening down the mountain-side. The danger from them was most imminent in the Great Couloir, for the rocks from a large area on the east face precipitate themselves through this gully. It takes ten minutes or more to traverse it. We had no sooner entered it than Burgener and David became terror-stricken. Each thought the other was going too slowly. Yet too great haste was to court danger of another kind. The character of the climbing left some things to be desired, and the bergschrund of the Furggen Glacier yawned through a blue haze far beneath. I was in the act of working around a sharp corner when a faint but ominous sound from above told us that a cannonade was coming. We all heard it about the same time, and instantly sought shelter by snuggling under the nearest projection on the face of the cliff. I was in an exposed position and tried to get back as quickly as I could. I managed to get out of harm's way in the nick of time; just as I let go my last handhold the dread messengers arrived,

> "Rattling with hollow roar down death's decline."

One fragment of rock struck my hand in midair, and with such force that for a time I feared one of my fingers had received serious injury. It turned out to be only a severe contusion. The remainder of the descent was completed without any noteworthy incident. By 4 o'clock we had reached the Alpine cabin, where we stopped long enough to brew a cup of tea and to allow Burgener and David to tidy the part of the cabin which we had occupied. This shelter among the clouds has been erected by the Swiss Alpine Club, and may be used freely by all Matterhorn climbers, on the sole condition that the guides employed leave it in good order.

Zermatt was aglow with lights as we passed the little churchyard where the remains of Hadow, Hudson, and

Michel Croz had been interred exactly forty years ago. A kinder fate had brought us, climbers of a later generation, back again from that proud crest,

> " Where the white mists, forever,
>   Are spread and upfurled—
> In the stir of the forces
>   Whence issued the world."

THE NAME "MT. RAINIER."

[The following communication is of such importance that its publication is considered desirable.—EDITOR.]

THE DIRECTORS OF THE SIERRA CLUB, SAN FRANCISCO.

Gentlemen: You have assigned to me the duty of making a report for your consideration upon the subject proposed by Mr. Charles F. Lummis; namely, to assist in having the name of Mt. Rainier changed to Mt. Tacoma.

Mr. Lummis' letter of September 5, 1905, is addressed from "The Landmarks Club," of which he is President; he is also the Editor of the *Out West* magazine, and has marked his opinions on the October and November numbers. In his letter he briefly asks the Sierra Club to join with the Landmarks Club "in an attempt to secure the restoration of the first name by which this noble peak was first known to men."

In the October number of the magazine, he writes "that the Sierra Club . . . ought to frown upon this historic impertinence, and ought to stand for the restoration of the historic name" (page 368); and in the November number he again urges this club to act in the matter of having "the inappropriate name of Mt. Rainier changed back to its original form" (page 494).

The subject is naturally one that interests the Sierra Club, which has given its support for the retention of the old Spanish names upon this coast, so far as seemed feasible and proper.

Some of you are aware that for the last half-century I have used my best endeavors to identify and restore old Spanish names to important locations along this western coast from Cape San Lucas to Mt. St. Elias.

The four editions of the Coast Pilot of California, Oregon, and Washington, and one of Alaska, attest to that fact.

As year after year I became more familiar with each mile of the coast line, and with the narratives of the early navigators, I entered upon the self-imposed task of writing the "Voyages of Discovery and Exploration on the Northwest Coast of America, from 1539 to 1603"; the "Identification of Drake's Anchorage on the Coast of California in 1579"; and other works involving discoveries on this coast, by land and by water, and by Spaniards, English, French, and Americans.

I have now ready for publication three hundred and ten manuscript pages on the "Discovery of San Francisco Bay, and the Rediscovery of the Port of Monterey," more than one hundred pages on the origin of the name California, and other matters of similar import. To aid me, I have obtained copies of manuscripts from the British Museum, from Madrid, and elsewhere.

I have believed in retaining and in applying all the old Spanish names; and have utilized Indian names when they were descriptive, and would use them all through Alaska where the prospector may need the services of native guides.

During six years' continuous service in the Puget Sound region, 1852-57, we retained the Indian, Spanish, and English names where they could be verified. The Hudson's Bay Company factors and traders used Indian names.

When there was no name for a permanent object available, it was of course necessary to adopt some appellation to headland or rock or anchorage, in order that it could be recognized in the Government records and charts.

In our publications, we have always expressed our admiration for the heroic labors of the early Spanish navigators on this coast; of the almost superhuman efforts of Bering and Chirikof; of the unequaled surveys of Cook and Vancouver; and of the daring and privations of the fur traders, English and American.

Within the last year, after years of waiting, we have received tracings from the originals of twelve early Spanish surveys on the Northwest Coast, with hundreds of names which we have placed upon Coast Survey charts for the Bureau at Washington. They have no counterpart in the United States, and we hope to obtain others.

We pray you will pardon this much of what we have been doing upon this coast since 1850, to gather the facts about the names thereon; but it seemed necessary to indicate that the matter of "historic" names had been constantly before us in geodetic and geographic work.

It is now pertinent to ask, By what authority are geographic names applied to special land and sea objects?

We need not go back to the early centuries; we must be governed by the methods and usages of recent date; and we may fairly assert that the first and highest authority is,

(1) By governmental decree. After that we acknowledge

(2) The accepted right of the discoverer in a new country with uncivilized inhabitants, or with no inhabitants.

(3) The long usage of geographers, navigators, travelers, and historians.

(4) The general opinion of experts in either or all of the preceding sources of authority.

(5) The striking peculiarity of the locality or object; and lastly,

(6) The names adopted by any other country for geographic objects; although this might be considered as coming under the first heading.

Under the first source of authority, a case was presented by the Government of the United States in the discussion of the proper location of the boundary-line between the United States and Great Britain from the parallel of forty-nine degrees through the Gulf of Georgia, Washington Sound, and the Strait of Fuca to the Pacific. It was declared that all the waters from the forty-ninth degree of latitude in the Gulf of Georgia, to Olympia in the south, to the entrance of the Strait of Fuca at the Pacific entrance, should, "for the purposes of this discussion be known as Puget Sound."

A more recent case is that where Germany changed the names of all the islands and waters northeast of New Guinea, in the year 1884. The names used by the Dutch, English, and French from their early discoverers, and those names used by the natives, were wiped from the maps and geographies. Every trader had known the native and the previously adopted names, but "the maps have been modified in the spirit of a mistaken or aggressive patriotism," etc. (Reclus, Volume Australia, page 319.)

The accepted right of the early discoverers has never been traversed by competent geographic authority. Carver named the Oregon or Oregan from Indian reports, although he never saw it, but Robert Gray first entered the mouth and named it the "Columbia's River," after one of his vessels. Vancouver, who had failed at the entrance, promptly acknowledged Gray's rights; and after Broughton, in the *Chatham,* surveyed it to Point Vancouver, Vancouver called it the Columbia River on his charts and in his narrative.

Meares' name of Cape Disappointment is retained, and Cape Hancock of Gray is forgotten, but Point Adams lives. Gray's Bay in the Columbia is retained, and Gray's Harbor remains.

We need not refer to Wilkes (1841) applying the names of his officers to the islands of Washington Sound, and proposing to call the Sound the Navy Archipelago. They are reminiscences.

The Spaniards, in 1774-93, Cook (1778), Vancouver (1792-94), were the early governmental discoverers and explorers on the Northwest Coast after the discoveries of Bering and Chirikof in 1741.

Neither party knowingly interfered with the original names given by the others. Vancouver's narrative shows the friendly relations between him and the Spaniards, who generously gave him tracings of their earlier surveys; and he accepted names given by the fur traders.

These men were exploring unknown regions inhabited by uncivilized peoples, whose language they had neither the time nor opportunity to learn. To give definition to their narratives and charts, they were compelled to adopt names for given objects of which they had first determined the geographic position, and made known to the civilized world.

No man has ever done more or better work than was done by Vancouver and his officers and men on this Northwest Coast, executed with dull sailing ships, and with instruments that would not be used to-day.

He did not come upon "this coast for the purpose of securing it for English dominion" (*Out West,* page 368). His voyage was "undertaken by His Majesty's command, principally with the view to ascertain the existence of any navigable communication between the North Pacific and North Atlantic oceans." For this purpose, he was directed to delineate the "Continental Shore"; and he completed a survey of discovery and exploration that is unique in the published history of geography.

The assertion on page 368 of *Out West,* that "neither this coast nor this country is in his [Vancouver's] debt," is not warranted by the facts. There is no inlet on the Northwest Coast south of the Peninsula of Alaska, to the head of which his boats did not penetrate. His latitudes are remarkably close to the best determinations of to-day. We have observed at many places where he did, and never found an error in the latitude exceeding two geographic miles.

In the conventions of 1822 to 1825 between Russia and the United States, and Russia and Great Britain, the only charts available for that long diplomatic controversy were those of Vancouver; by the decisions of those conventions Russia held all the Archipelago Alexander; and in 1867 the United States purchased from Russia the territory of Alaska, won by Vancouver's silent but unanswerable testimony.

In 1849-52, Tebenkof, Captain of the first rank in the Russian Navy, and sometime Governor of Alaska, had published his great atlas of thirty-eight charts from Cape San Lucas to the Arctic. He adopted the scale and outline of Vancouver's charts.

In 1867, when we officially visited Alaska to make a geographic reconnaissance, and report upon the resources of that region, the United States revenue-cutter *Lincoln*, which carried our party, used the Tebenkof-Vancouver charts from Victoria through the interior passages, to the head of Lynn Canal, to Sitka, Kadiak, and the Aleutian Islands.

These charts continued in use until the United States Coast and Geodetic Survey, or the other branches of the Government, and the British Government, made more detailed surveys.

In Vancouver's application of names—and he was far from prolific—he was conforming to the precepts of his day and of his profession. That method has been followed to the present time; it is seen in the latest Antarctic explorations. If Roald Amundsen has discovered some new anchorage, some new channel, or located some mountain peak in the Arctic, he is entitled to name them or to apply the Esquimau designation. Geographers will associate his name with his discoveries.*

Mts. Hood, St. Helens, Rainier, and Baker are found on Vancouver's charts of the coast within the range of his discoveries. Each was unique in its mass and snow covering, and in their heights towering far above the general crest-line of the Cascade Range. He particularly mentions naming "Mount Rainier" and "Mount St. Helens," and his reasons therefor.

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*As we are reading the proof, we may add that, upon our suggestion, the Hydrographer of the Lords Admiralty and the Hydrographer of the U. S. Navy Department have directed that the name Amundsen Gulf be applied to that unnamed area of water in the Arctic between Cape Bathurst and Cape Baring, and be placed upon all official charts.

George Vancouver did not ignore Indian names, whenever he could obtain them from the Spaniards and the fur traders. He had used all the Hawaiian names he could gather; and on this coast he refers to the promontory Classet, Tatooche's Island, Clayoquot and Nootka sounds. The Indians he met with were not desirable companions, and he was not collecting folk-lore. He was presenting fresh discoveries in geography to the world; he was settling a commercial problem.

His narrative and his charts indicate his acceptance of every Spanish name he could ascertain from the navigators and Catholic missionaries. He left the impress of his high character upon the good fathers and the Spanish officers through three years of intercourse; as he did upon Kamehameha and the Hawaiians.

One of the two principal magazines on the Pacific Coast devoted to mountain climbing is the "*Mazama,* a Record of Mountaineering in the Pacific Northwest," published at Portland, Oregon. The number for October, 1900, is devoted to the ascent of Mt. Rainier, and the barometric determination of its height. Throughout the text no other name is referred to, and the illustrations carry the historical title June, 1897. In the annual number of *Mazama,* 1905, recounting the second ascent of Mt. Rainier by that body of snow peak climbers, and some of the members of the Sierra Club, a full and very acceptable array of incidents and impressions is presented by several writers; and in general the Vancouver name for the mountain is retained. Henry Gannett, the geographer of the United States Geological Survey, writes that "the King of all these volcanic cones of the Cascade Range is Mount Rainier." One professor uses the name in "deference to supposed geographic authority"; but the consensus of expression is, "Mount Rainier."

The same can be said of the 1906 BULLETIN of the Sierra Club; the first title is "The Sierra Club Ascent of Mt. Rainier." The Weather Bureau Service uses the name; and very naturally the Joint Commissioners of "the Mount Rainier National Park." Also the State Geologist of Washington, and the President of the Appalachian Mountain Club. Professor McAdie, who was on that ascent, remarks that all Vancouver's names "have been graciously accepted and remain unquestioned save one, Mount Rainier."

Vancouver's names upon this Western Coast are part of the history of geographic discovery and exploration, promptly given to the world in his narrative and charts; and have been unchallenged by geographers of all nationalities.

They were adopted by the first settlers of Oregon; by the Americans who first came to the Puget Sound region; by the Territorial Government under Governor I. I. Stevens (retired major United States Army, afterwards killed at Chantilly); and naturally fell into use by the army officers at the military posts of Vancouver, Steilacoom (Tchil-i-com) and Port Townsend (Townshend); and by the United States Coast Survey when working in the great arms of the sea from the entrance of the Strait of Fuca eastward, northward, and southward.

Of course, they were in use by the factors and employees of the Hudson's Bay Company, who introduced Indian names when necessary.

Even before the advent of the American as a settler, the United States Exploring Expedition under Wilkes used the names Baker, Rainier, St. Helens, and Hood, and they are on the published maps of 1841.

From 1852 to 1857, both inclusive, when surveying in the Puget Sound waters, we never heard names other than those of Vancouver and the Spaniards. We sought Indian names as shown on the Neeah Bay sheet of 1852.

In later years, we have learned that the Indian name of Rainier was Ta-gho′-ma, with a deep guttural stress on the second syllable.

In July, 1857, when Lieutenant A. V. Kautz, U. S. A., was stationed at the military post at Steilacoom, he made an attempt to reach the summit of the mountain, accompanied by Surgeon R. O. Craig and Private Dogue. It was Mt. Rainier, although he had Indian guides, and he knew some of their language. During Governor Stevens' term of office, he never used any other name.

When P. B. Van Trump and Hazard Stevens made the ascent, in 1870, the published accounts called the mountain Rainier. In 1876, when General Hazard Stevens republished a more detailed account of that successful ascent in the *Atlantic Monthly,* the title was "The Ascent of Takhoma," with this explanatory footnote: "Tak-ho′-ma, or Ta-ho-ma among Yakimas, Klickitats, Puyallups, Nisquallys, and allied tribes of Indians, is the generic term for mountain, used precisely as we use the word 'mount,' as Takhomah Wynatchie, or Mount Wynatchie. But they all designate Rainier simply as Takhoma, or The Mountain, just as the mountain men used to call it the 'Old He.' "

During the Indian War or 1855-56 in that region, the man who would have dared to suggest any Indian name to the mountain would have been tabooed; but times and conditions have changed.

In 1882, Hon. Elwood Evans, then of New Tacoma, (and a classmate with us in the Central High School of Philadelphia,) called together several old and reliable Indians to give him the proper name of the mountain. We give the result of this conference in the statement of Mr. Flett.

The claim that the Indians on the east and west sides of the Cascade Range always called Mt. Rainier by the name Tacoma is not sustained by native evidence. This is clearly shown by the proceedings of the "Tacoma Academy of Sciences," published in pamphlet form in 1893. At this special meeting old and young Indians of the Puget Sound region insisted that their name of the mountain was "Tacobet."

Besides these Indians in attendance, there were letters read with over forty names of Indians who had declared the name of the mountain as "Tacobet"; among these was the daughter of Chief Seattle. These Indians all belonged to the Puget Sound side of the mountain: a few belonging to or representing the east side of the mountain said "the old Indian name is and always was 'Ta-ho-ma.' "

Col. B. F. Shaw, who had been an Indian interpreter, wrote that the word Tacoma "belongs to the Scadgit Indian language, and means plenty of food or nourishment."

Mr. John Flett, who came to Puget Sound in 1841, gave evidence to Hon. Elwood Evans in 1882, that "the Indians from the east side of the mountains (the Klickitats) call it Ta-ho-ma," . . . which "meant a woman's breast." . . . Mr. Flett "translated their guttural expressions, which resulted in aggregating the word 'Tahoma,' though really no two Indians pronounced the word exactly alike," (page 6).

Mr. T. I. McKenney, at one time Superintendent of Indian Affairs, thought "the present 'Tacoma' was a corruption of the Indian 'Tacopa' or 'Ta-co-pe,' which in Indian means white" (page 6).

Theodore Winthrop, in his book published in 1862, had a Klickitat guide from Puget Sound to the Dalles, Columbia River, in 1853; and from this guide he obtained the name "Tachoma," which several authorities say is strongly guttural.

The address of Judge James Wickersham, covering the extracts we have quoted from the Proceedings of the Academy, is dated February 6, 1893.

In August, 1883, Messrs. Geo. B. Bayley, of San Francisco, and P. B. Van Trump, of Yelm, made the ascent of Mt. Rainier to the southern peak or edge of the old crater; and at the close of the published description, Mr. Van Trump writes: "Our neighbors of Tacoma, and some late writers, are dropping the time-honored name of Rainier, and are giving the mountain its Indian appellation, but spell and pronounce it the same as the name of the would-be city of the West. If the Indian name is to be adopted, why not give it also its guttural pronunciation, Tachoma, with the German sound to the letters *ach*?"

In 1888, Mr. Van Trump again made the ascent with John Muir and William Keith. In a long letter which he wrote to us in September of that year, he says: "We did not, greatly to my disappointment, journey to and explore the north peak (which Stevens and I named Ta-ho′-ma), the party not being willing to stop long enough on the Mt. top to accomplish that purpose."

After Winthrop, that is the first definite mention that we recall of the name being given to one of the three summits of Mt. Rainier.

And it may be permitted us here to state that our colleague on the United States Coast Survey, James Smyth Lawson, long a resident of Olympia, determined the geographic position of the three prominent points, and the heights of two of them trigometrically, in 1870—the "middle, highest peak," 14,444 feet above the sea; the "south, lowest peak," 14,279 feet. The former is 32″.77 of latitude north of the latter, and 2″.28 of longitude west. We had made the first observations for position in 1856, and Lawson in 1867.

When the citizens of Tacoma first proposed the change of the name Rainier, we do not remember, but communications were made to the General Government before 1890. In that year, the Executive Order for the organization of the "United States Board of Geographic Names" was issued on the 4th of September by President Harrison. The following gentlemen composed the Board:

Professor Thomas C. Mendenhall, U. S. Coast and Geodetic Survey, Chairman.

Andrew H. Allen, Department of State.

Captain Henry L. Howison, Light House Board, Treasury Department.

Captain Thomas Tuttle, Engineer Corps, War Department.

Lieutenant Richardson Clover, Hydrographic Office, Navy Department.

Pierson H. Bristow, Post-Office Department.

Otis T. Mason, Smithsonian Institution.

Herbert G. Ogden, United States Coast and Geodetic Survey.

Henry Gannett, United States Geological Survey.

Marcus Baker, United States Geological Survey.

Bulletin No. 1 of the Board was issued December 31, 1890, through the Smithsonian Institution; and on page 7 is this declaration:

No. "170 **Rainier Mt.** Washington, U. S. *Tacoma.*" In the first edition of 1890-91, published in 1892, "**Rainier Mt.** Washington," page 35. In the first edition of the second report, 1890-99, Washington, 1900; "**Rainier**; mountain peak in Washington. (Not Ranier nor Takoma"); page 105. In the second edition of that report, 1901, "**Rainier**; mountain peak in Washington. (Not Ranier nor Tacoma"); page 105.

If there were any lingering and sympathetic doubt in the matter we add the following authority:

"It is hereby ordered that there be added to the duties of the United States Board of Geographic Names, created by Executive order dated September 4, 1890, the duty of determining, changing, and fixing place names within the United States and insular possessions, and it is hereby directed that all names hereafter suggested for any place by any officer or employee of the Government, shall be referred to said board for its consideration and approval before publication.

"In these matters, as in all cases of disputed nomenclature, the decisions of the board are to be accepted by the departments of the Government as the standard authority.

"THEODORE ROOSEVELT.

"The White House, January 23, 1906."

This examination has extended beyond what we expected to present, yet it seemed desirable not to appeal to any local prejudices, but to lead through good authority to that of the highest governmental decree. And we respectfully submit that in this instance such decree is in conformity with the usage of historians, geographers, and government records, through more than a century; therefore we suggest that the Sierra Club can take no action whatever in urging the use of the new name proposed for Mt. Rainier.

Very respectfully and truly,
your obedient servant,

GEORGE DAVIDSON.

2221 WASHINGTON STREET,
SAN FRANCISCO, CAL.,
February 20, 1906.

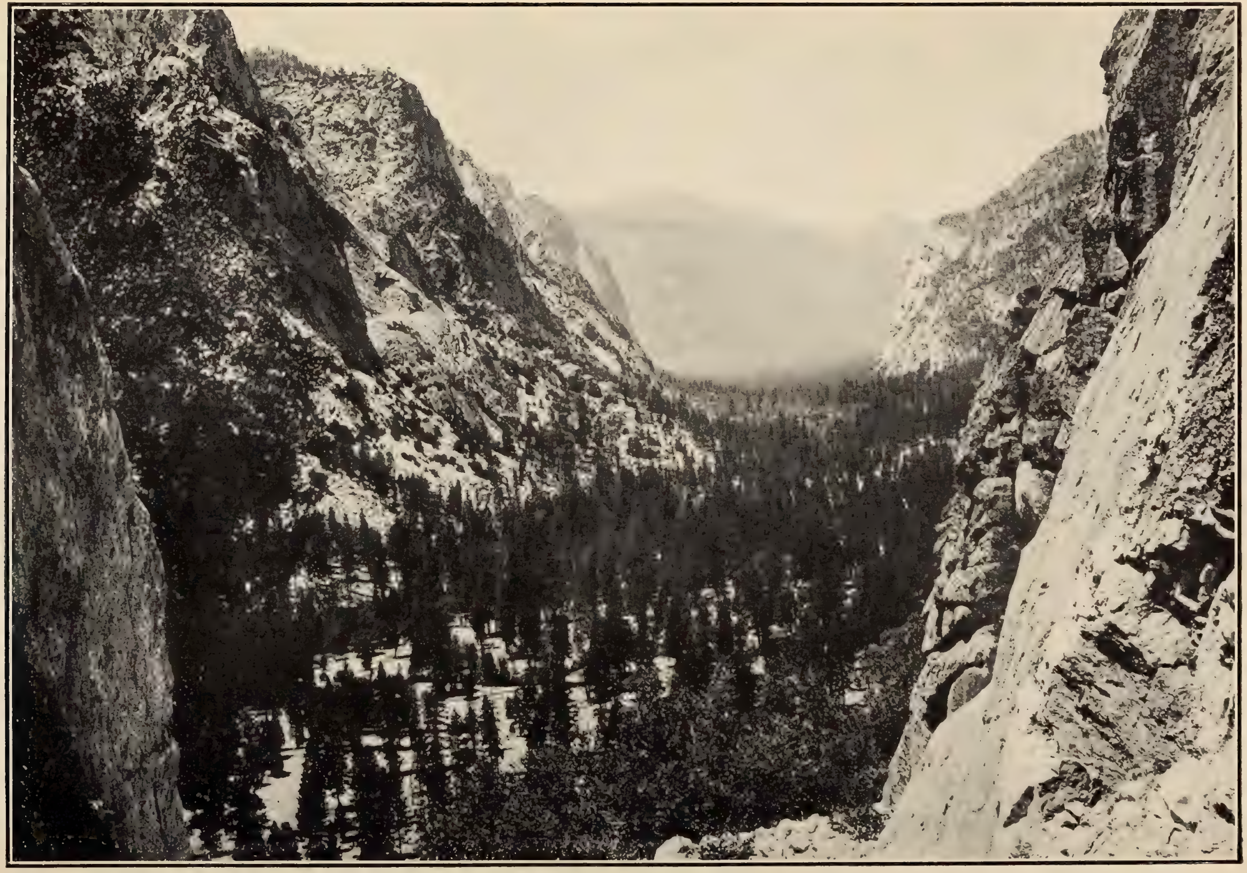
THE SECOND KING'S RIVER OUTING.

By Marion Randall.

During the early part of the spring of 1906 there were indications of an unusually large enrollment for the second Outing to the King's River Cañon. The members who had visited this region four years ago and those of us who were unacquainted with it were alike enthusiastic; and it seemed probable that transportation facilities would have to be taxed to the utmost to provide for the large party that was expected. But April, with its demolishment of well-laid plans, wrought havoc among the list even of the most loyal, while tidings of high water and lingering snow a little later alarmed the more timid among the tenderfeet until there remained only eighty intrepid Sierrans whom fire, 'quake, and flood could not deter from their wanderings.

Except for the one stageload of Southern California members who traveled by way of Visalia, the whole party forgathered at Sanger in the early dawn of July 3d, and there took stage for Sequoia Lake, a few miles beyond Millwood, where we spent our first night under the open sky.

Wednesday morning found us all ready to take the trail, and for three days we traveled in uneventful fashion through still forests of fir and pine, with here and there an open meadow or a flower-bordered stream to brighten the way. The lower trail, leading through Huckleberry Valley and Long Meadow, which we took to avoid the snows of the higher route, though longer than that by way of Horse Corral, has the advantage of passing through five or six small groves of sequoias after leaving the General Grant Park. Within the park one looks upon the giant trees with a somewhat



KING'S RIVER CAÑON, FROM COPPER MINE.

From photograph by J. N. Le Conte.

alien eye. They are set apart, fenced around, labeled, and made a show for the curious till half their charm is lost. But as one journeys farther from accustomed ways, where each new height brings a wider outlook into the stern gray heart of the mountain country, a turn of the trail brings one unexpectedly into a group of these silent, majestic trees. It is then that a more intimate sense of their beauty possesses one, the marvel of that life where "a thousand years are but as yesterday," and wonder, even admiration, is lost in reverence.

We had heard that the King's River was in flood, but I think few of us appreciated what that meant until we first caught sight of the foaming white torrent that raced through the cañon below Cedar Grove. It was a wicked-looking, dangerous river, full of swirls and eddies and treacherous backwaters whence some passionate, despairing living thing seemed to be fighting to escape. Willow bushes, borne down by the force of the rushing waters, barely lifted their straining tops above the current; trees outlining the normal banks stood six feet deep in water; and on one pine fairly in the middle of the stream a large placard gave futile warning of the danger from forest fires.

Of course, bridges and footlogs had suffered a wholesale destruction, and the main bridge, leading to our permanent camp, where a large part of the commissary supplies were already installed, had been swept away. Rangers and packers were already at work felling trees for its reconstruction; so we went into camp at Cedar Grove—and waited. As many of the Sierra Club men joined heartily in the work, the first stringer was very soon across. But unfortunately the river rose again, carrying away the log and leaving four honored members who had shinnied across upon it to join the workers on the other shore, marooned, with not even a toothbrush among them.

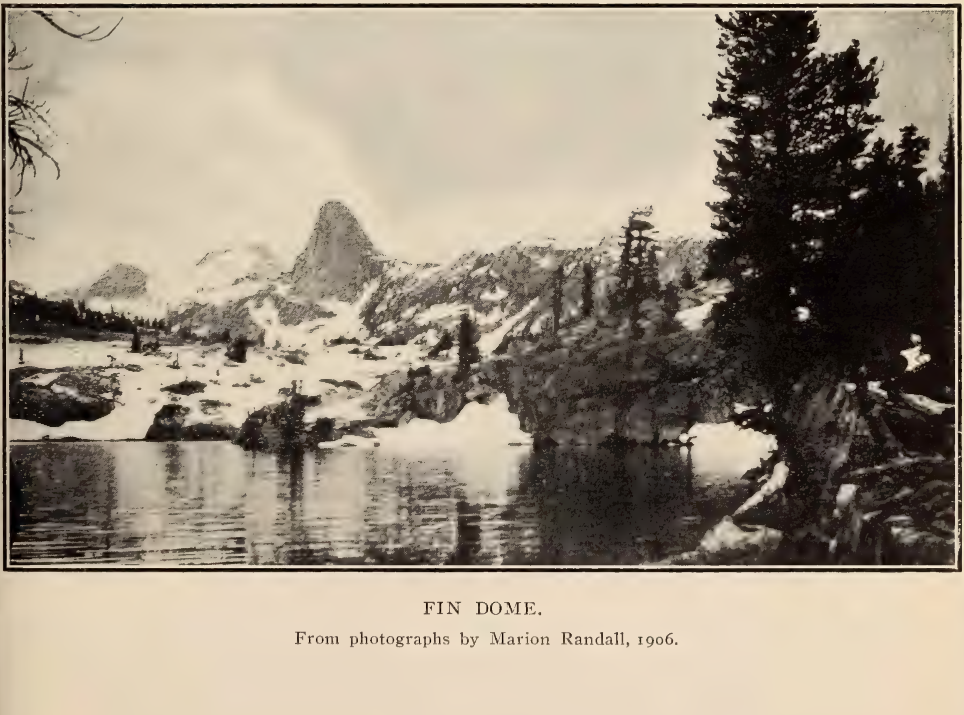
In view of some such mishap, however, another plan had been perfected for a temporary bridge, utilizing the remains of the old footlog which formerly spanned the river just above the mouth of Granite Creek. Nearly every man in camp fell to work on this; and the marooned men on the other shore, inspired by a longing for the solid comforts of their dunnage-bags, worked with such zeal that they not only did their full share of bridge construction, but likewise built a difficult piece of trail through a talus-pile in one place where the meadow was submerged.

At the end of the week we moved to the permanent camp close under the Grand Sentinel, a spot dear to many a Sierran from the associations of four years ago. Here we found that our troubles were not yet at an end, for the bridge which led to the Bubb's Creek trail was sadly in need of repairs.

However, the bridge-builders decided to take a few days of rest and relaxation, and to that end a knapsack trip was planned into Paradise Valley. There is a trail into Paradise, but no one had been over it as yet, and no one knew what pitfalls snow and flood might have laid for the mules. So we left them behind and started, eighteen strong, with strange, unshapely bundles upon our backs and looks of conscious, joyous heroism on our faces. We chose the route by Mist Falls and over the talus-piles. Crossing a talus-pile does not mean merely walking. It means jumping, bending, reaching, crawling over, under, through, and around boulders that may be as big as your house or as big as your hat, but which are sure to have sharp corners or unsteady foundations or slippery surfaces to work your undoing one way or another. We had about three miles of this before we reached Paradise, a cañon similar to the main South Fork, but wider, with broader meadows and more numerous waterfalls.

Paradise Valley has a charm far surpassing that of the better-known cañon,—the indescribable charm of untrodden ways. The meadows have a virgin freshness; there is not a cabin nor a corral nor a sign of man's

MT. RIXFORD AND RAE LAKE (FROZEN) JULY 24, 1906.



FIN DOME.

From photographs by Marion Randall, 1906.

occupation save the cluster of blackened stones that here and there marks the site of a wanderer's camp. From end to end the river runs between wooded banks, now flowing dark and somber under the shadow of pines, now radiant and glimmering in the green diffused light under the twinkling aspens. It is such a happy river. It seems to have caught all the merriment and the exultation of the score of waterfalls that tumble down from the high country to join it. Nor is the more austere beauty of cliff sculpture wanting—massive creviced walls where the blue shadows linger till midday.

Although disappointed in the fish we expected to catch, we found our little shelter among the pines a delightful camping-place, and were only sorry that we were not prepared for a longer stay. We spent the morning in a leisurely walk to the head of the valley, where four of us, separated from the others for the moment, had the good fortune to start a deer.

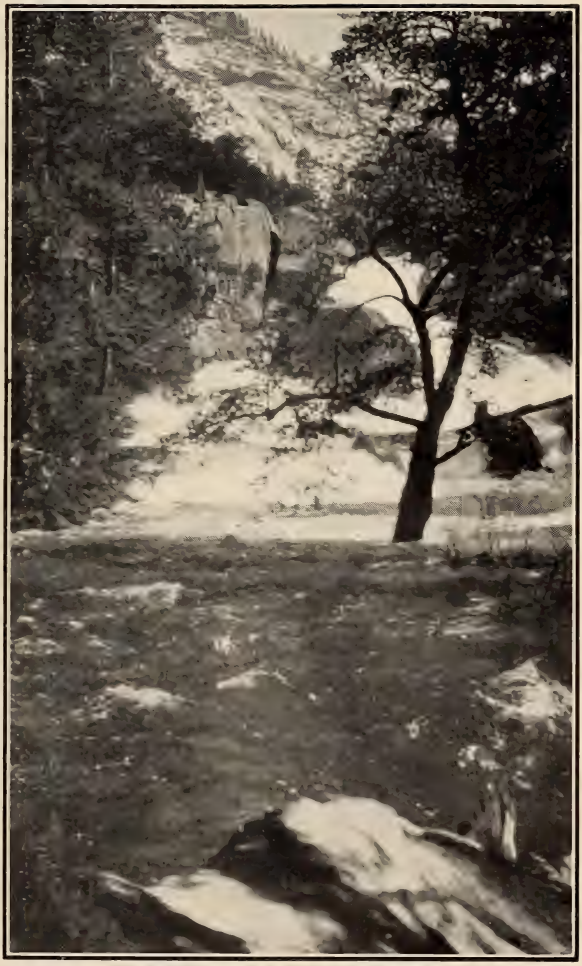
Leaving Paradise in the afternoon, we had a most impressive view of a storm gathering on the high mountains which encircle the valley and which come into sight as one climbs the zigzig trail up the western wall,—Pyramid and Arrow peaks to the north; eastward, rising directly above the gulf of the valley, Mt. King and Mt. Gardiner, sharp gray peaks streaked with snow; and to the south and southeast, Brewer and the numberless peaks of the summit crest. Over all this long jagged chain the shifting clouds were scattering now sunlight, now shadow, veiling mountain-tops in ghostly mist garments and sending little flickering sprites of sunbeams dancing up and down the cañon walls. Our camp that night, high among the tamaracks, near Goat Mountain, overlooked the same wide stretch of mountain land; and there in the intervals of homely camp toil, the making of fires, the cooking of food, and the washing of dishes (oh, blessed enchantment of mountain days!), we could watch the marvelous change from alpenglow to twilight with never a thought of incongruity to mar its wonder.

But herein, perhaps, lies one secret of the keen joy of gypsy ways,—there is enough of this contact of common things to make life sweet and wholesome. To walk with one's eyes forever fixed upon the stars is just as narrowing to the field of vision as never to lift them from the ground.

The next morning we met some twoscore Sierrans on top of Goat Mountain (12,800 ft.), a peak without pretensions either of great height or difficulty, but which nevertheless commands a splendid outlook over the Sierra from the Palisades to the Kaweahs. The climb was remarkable only for the diversity of routes chosen by the many separate parties. It is one of those mountains whose highest point is not determinable from below, and even some of those who escaped the lure of False Peak found themselves separated from the real summit by an insecure knife-edge and a treacherous bit of snow. But in their many and various ways one and all finally reached the top and in due time joyously coasted down the snow and made their way back to camp by the Copper Creek trail.

This, as it happened, was the only mountain climb of the Outing, for even while undergoing repairs the bridge leading to the country about Bullfrog was swept downstream. We were greatly disappointed, for we had expected to have at least a week among the high mountains; but in lieu of this all those who wished to do so were given the opportunity to visit Paradise Valley (with a pack-train this time), where we made voyages of discovery up the little-known cañons of Wood's Creek and the upper Paradise Fork.

The plan had been to take the mules only into Paradise; but after spending two nights there many of us wished to journey still farther into the unknown country. Even the packer confessed to this longing; and while some members of the party were satisfied to return to the main camp, about twenty-five people, accompanied by the four animals who succeeded in swimming the river,



KING'S RIVER IN FLOOD.

From photograph by Marion Randall, 1906.

started up Wood's Creek. From this time it was virtually a knapsack trip, for the animals could carry only the commissary, leaving each mountaineer to shoulder his own bedding. It was amusing to note how, as difficulty was added to difficulty, the lesser enthusiasts one by one dropped back into the straggling ranks of those returning to camp, until the fourth day saw but sixteen following the trail to the pass.

It was not much of a trail,—that was the trouble. The advance sheet of the Geological Survey, the only map of that region yet published, showed the way through,—over the crest near Rixford and down to Lake Charlotte and Bullfrog,—but gave no hint of the tangled undergrowth, the snowbanks, and the avalanche-furrows through which the plucky mules had to fight their way. Snow bridges over the lusty young river twice saved the day for the mules, and even the pedestrians were compelled to resort to unusual methods of crossing the troublesome stream, once making use of a great rubbish heap of splintered pine deposited in the stream-bed by avalanche and flood, and again resorting to that undignified but wholly satisfactory form of ferry, riding double on a mule.

It was a wild, sterile, rockbound place, this cañon of Wood's Creek, and our mules found little cheer that night at our camp above Rae Lake. Indeed, there was at first cold comfort for either man or beast, for a heavy thunderstorm drenched both us and the firewood, and the only available camping-ground was a granite oasis in a waste of snow—a dreary enough outlook, too, over the frozen lake to a wall of cold snow-peaks with a dark canopy of storm-clouds above. But supper and a cheerfully blazing fire wrought an amazing change in things. The clouds parted at sunset; westward Fin Dome and the sharp summit of Mt. King rose blackly against the sky, barring the way to the sunset land; but Rixford and the circle of grim peaks to the south and southwest were softened and glorified in the evening light. And under the twisted tamaracks, where the fire now sparkled merrily, we sat contentedly and watched the pale crescent moon shining ever brighter as the darkness gathered, until it too dropped out of sight behind Fin Dome.

The next morning's undertaking was the most hazardous of the outing,—the crossing of Glenn Pass. The luckless mules had first to swim the narrow neck of water connecting the two basins of Rae Lake and then plow their way through the snow to the foot of the pass. Fortunately for us the snow was in perfect condition and gave the firmest footing possible under the circumstances. A tongue of shifting rock led part way up the wall, but above this the snow was so steep that the mules were unpacked and led up it unencumbered, while the kyacks were carried to the summit by hand. It was anxious work watching their slow progress and realizing that a single flounder might mean the loss of an animal. Nor was our anxiety lessened on reaching the summit, for the other side of the pass looked fully as forbidding as the steep incline up which we had just labored. It proved to be less difficult than we anticipated, however, for the descent was made with only one slight mishap, one of the mules falling and having to be unpacked before he could be induced to rise.

At Lake Charlotte we found only a few patches of meadow appearing through the snow, and Bullfrog, where we made our next camp, was likewise still frostbound. So, as our provisions were running low, and as the mules needed better pasturage than the scanty vegetation of the upper country afforded, we decided to journey down Bubb's Creek the next morning to Junction Meadows and return to camp the following day instead of remaining at Bullfrog long enough to climb University Peak, as we had hoped to do.

On the whole, and in spite of the many disappointing and enforced changes of plan, the Outing was exceptionally enjoyable. The unusual conditions gave rise to so many unusual experiences and laughable incidents that

BLACK MOUNTAIN, FROM GLENN'S PASS.

From photograph by Duncan McDuffie.

we might well thank the tumultuous river for the trouble it thought to cause us. It has been a matter of pride with the Sierra Club that the management of its outings has been so perfected that the goodly fellowship of the multitude is exempt from the responsibilities and labors of normal camping experience; but I think that very few of those whose spirit and enthusiasm and good brawn went into the building of those bridges would exchange for the most perfect outing ever organized the consciousness of having with their own aching backs and blistered hands upheld one of the foremost aims of the Club—to make smooth the way for those who may follow.

THE MOTION OF THE NISQUALLY GLACIER, MT. RAINIER.*

By Joseph N. Le Conte.

Mt. Rainier is an extinct volcanic cone situated in the western portion of the State of Washington. Its highest point, as determined by the U. S. Geological Survey, is in Latitude 46° 51′, and Longitude 121° 45′.5, and its altitude, according to the latest barometric measurements, is about 14,400 feet. The mountain rises in the midst of a heavily timbered region on the western slope of the Cascade Range. This region does not average over 4,000 feet above sea-level, so that the mountain rises as a great isolated mass, visible for many miles.

The humid climate of this portion of the continent gives rise to an enormous precipitation along the coast, most of which falls between November and May. Above the level of 6,000 feet, almost the whole of this is in the form of snow. A system of glaciers is thus formed on Mt. Rainier, which has a common and continuous névé mass around the crater extending down the slopes for a distance of about a mile. Below this the névé masses become separated by thin rocky spurs, and finally consolidate into a very perfect series of eleven radiating ice-streams, having a striking resemblance on a map to the rays of a starfish. The circle which includes the ends of these glaciers at the present time is about ten miles in diameter.

During the summer of 1905, the writer, as a member of the Sierra Club's Outing to Paradise Park on the south slopes of this mountain, had the opportunity of making a few measurements of the motion of the Nis-

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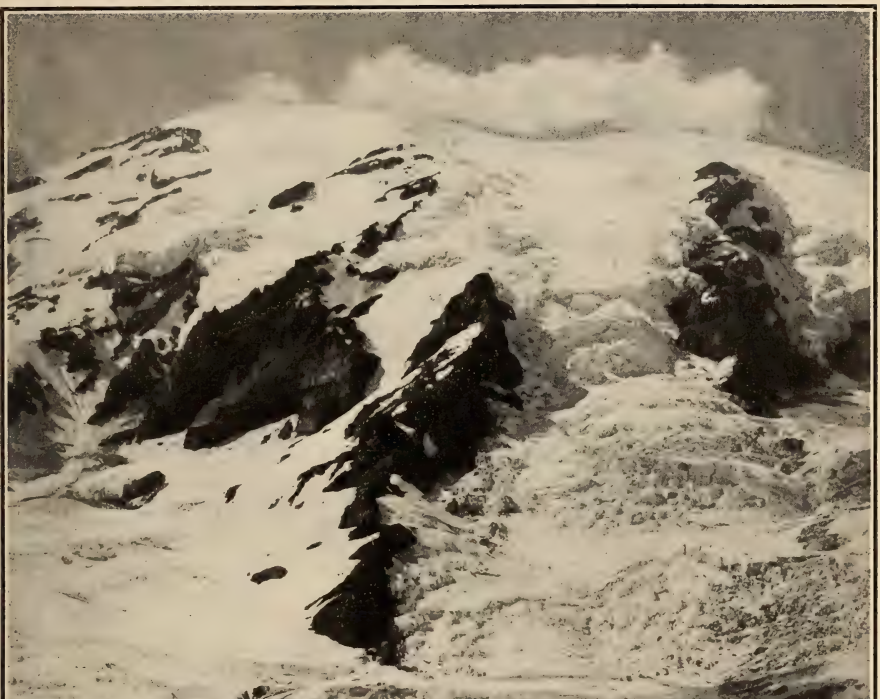
* This article appeared in "Zeitschrift für Gletscherkunde," I. Band, 1906, edited by Professor Dr. Ed. Brückner and published by Gebrüder Borutraeger, Berlin, S. W. 11 Dessauer Strasse, 29.—Editor.



HEAD OF NISQUALLY GLACIER.
(SHOWING THE FIRST 8,000 FEET OF VERTICAL DESCENT.)
From artotype in *Nature Magazine*.

qually Glacier during the month of July. The position of the end of the glacier was determined, and other of its characteristics noted, in the hope that future observers may be able to determine the changes that take place as time goes on.

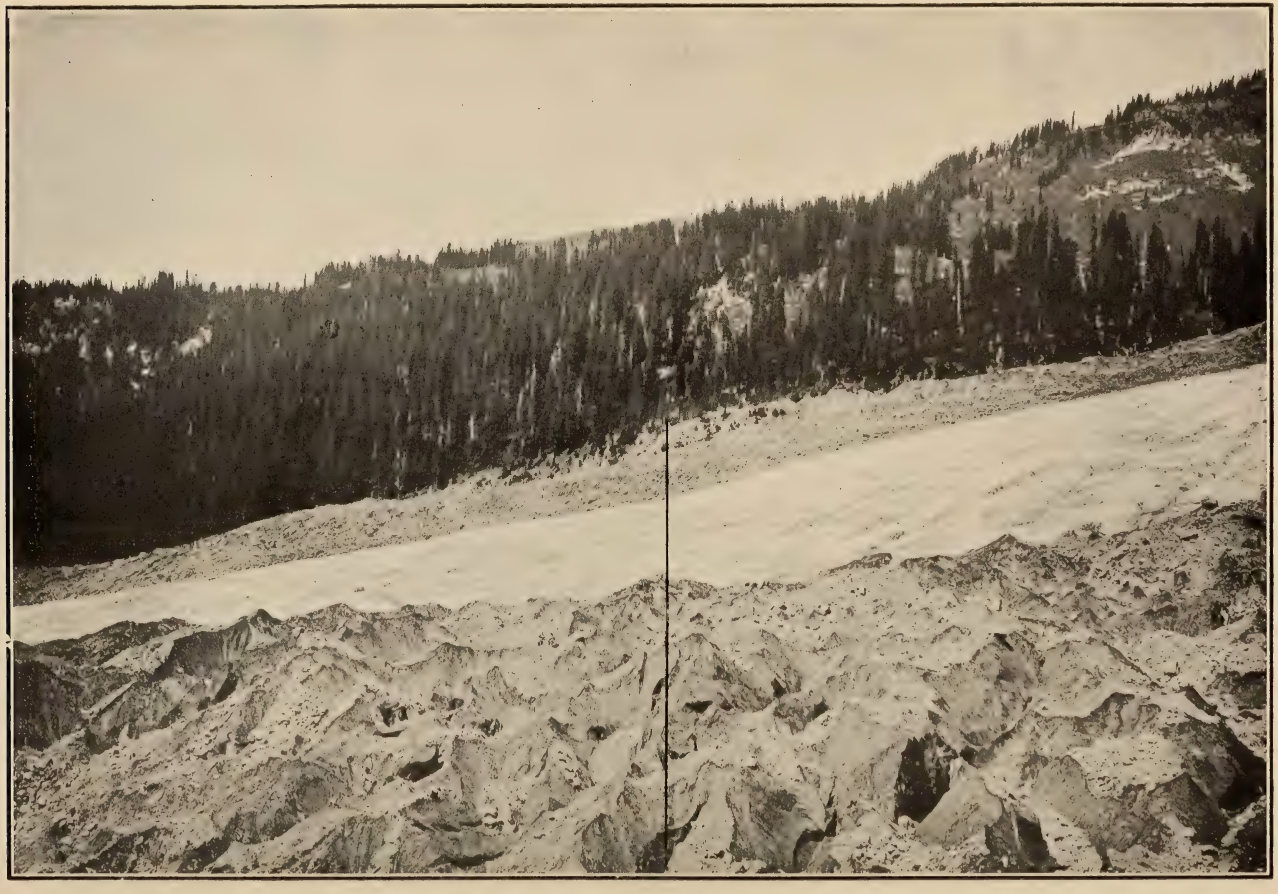
The Nisqually Glacier takes its rise on the southern rim of the crater, and for the first three miles of its course has a direct southerly trend. The eastern side of its trough is formed by a high conspicuous mass of rock known as Gibraltar, and the western side by a relatively low rocky spur separating it from the next large glacier in that direction, the Kautz. Within the first three miles the main névé stream makes a total descent of about 8,000 feet, and the surface is broken by enormous ice-falls and faults. The average slope in this part is therefore about thirty degrees, and the average width, including its western tributary, the Stevens Glacier, may be taken at a mile and a quarter. At the end of this steep descent the grade decreases to about ten degrees, and the ice here forms a great crevassed field into which the Stevens Glacier falls over a sheer cliff about 300 feet high. A little farther on the ice becomes fairly consolidated and turns to the southwest, maintaining this trend throughout the rest of its course. A mile below the junction of the Stevens, the glacier passes over an ice-fall, descending perhaps 500 feet in a quarter of a mile. The surface is here cut by large transverse crevasses into an almost impassable mass of séracs. Below the ice-fall the stream again consolidates into a beautifully smooth glassy surface, with only small fractures a few feet in width. The slope of this part for over a mile is about eleven degrees. Marginal crevasses now begin to show in a marked degree, and these become larger and larger through lateral melting as the snout is approached. The ice ends abruptly in a very steep slope at an altitude of about 4,000 feet.

The eastern side of the glacier is strewed with rock and sand for a breadth of from 300 to 600 feet. The spur of rock between the main stream and the Stevens

Glacier gives rise to a very perfect medial moraine, about one third the glacier's width from its western edge. A high bluff of lava just below the junction of the Stevens furnishes material for a heavy lateral moraine on the western side also, leaving but a narrow strip of clear ice between it and the medial. The medial moraine in the upper reaches of the glacier is a mere train of débris on the surface. Lower down it forms a ridge, and about a thousand feet back from the snout this ridge is over eighty feet high. Nowhere, however, does the skin of débris average more than six inches to a foot in thickness, the core of the ridge being clear ice, which is protected from more rapid melting by the covering.

The motion of the glacier was measured accurately at a point about 3,000 feet from the snout. Here the surface was smooth and free from crevasses, and the sides of the stream almost parallel. A white stake about two inches square was set in a pile of rocks on top of one of the ancient border moraines on the east side, 300 feet from the eastern edge of the glacier, and about fifty feet above its surface. This will for convenience be called the East Base. A second stake, the West Base, was set on the opposite bank on a ledge of granite about the same height above the surface. These stakes were intervisible, and the distance between them as determined by triangulation was 1,944 feet. A transit-instrument was set over the East Base, sighted on the western one, and a line run across the glacier.

The usual method of observing the motion of a glacier is to measure the movement of rods placed in holes bored in the ice. In the present instance, owing to inexperience, and to the difficulty of transportation, the auger used for boring the holes was but fourteen inches long, and it was found that a wooden rod placed in so shallow a hole was almost certain to fall over in the course of a day, on account of the rapid melting at the point of contact between the rod and the ice. As a consequence no rods were placed in the holes at all, but these latter



VIEW ACROSS NISQUALLY GLACIER, FROM THE EAST BASE.

From photograph by J. N. Le Conte.

were left open, their positions being identified by small piles of stones a few feet down-stream. Their size increased slightly in the course of two days, but the circular form was perfectly preserved, enabling a measurement to be made to the center of a hole with an accuracy of two or three tenths of an inch. They were rebored every two days.

The locations of the various holes with relation to one another and to the edges of the glacier are as follows:—

Eastern edge	to	No. 1	200	feet.
No. 1	"	No. 2	205	"
No. 2	"	No. 3	153	"
No. 3	"	No. 4	105	"
No. 4	"	No. 5	147	"
No. 5	"	No. 6	163	"
No. 6	"	No. 7	50	"
No. 7	"	No. 8	206	"
No. 8	"	No. 9	179	"
No. 9	"	Western edge	75	"
Total width of the glacier			1,483	feet.

Figure A is a plan on this line, and Figure B a profile.

The distances were measured with a hundred-foot steel tape. Hole No. 1 was in the middle of the west lateral moraine, which is here 400 feet wide. Nos. 2, 3, 4, and 5 were in the clean white ice of the main stream, No. 6 in the top of the medial moraine, and No. 7 a short distance west of it, but this hole was lost soon after the measurements were begun. No. 8 was in the narrow strip of clear ice west of the medial, and No. 9 near the edge of the western lateral moraine. The positions of these holes may not be the best, but they were in general necessary for clear seeing from the transit stations. Holes Nos. 1–6 were observed from the East Base, and the others from the West Base. The base-line was not exactly at right angles to the axis of the glacier, which is assumed to be parallel to the sides; the sides having a very gentle curvature for a mile above the section measured. But measurements were made at right angles to the base-line as selected, and a very slight correction was made to obtain the true velocity. The slope of the surface of the ice midway between holes 3 and 4 was eleven degrees, and the distance from the line to the snout was 2,950 feet. The results are collected in the table, and are shown graphically in the figures. All measurements were made about 10 A. M., and the daily motions are for twenty-four hours.

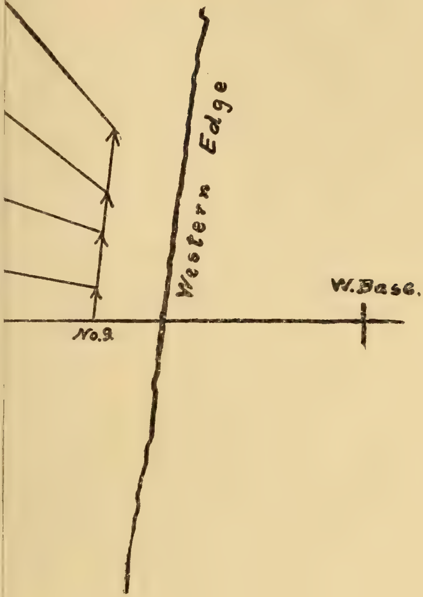
MOTION OF THE ICE OF NISQUALLY GLACIER, JULY, 1906.

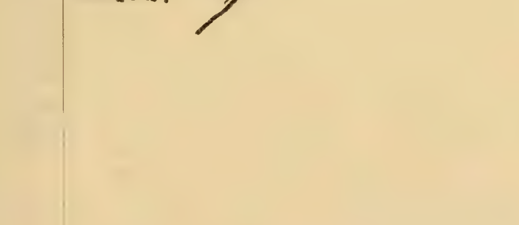
HOLES	DAILY MOTION IN INCHES					DISTANCES OF HOLES IN FEET	
	July 18th July 20th	July 20th to July 22d	July 22d to July 26th	July 26th to July 28th	July 18th to July 28th	From east edge	From west edge
1	11.3	17.8	10.1	9.4	11.8	200	
2	15.6	17.3(?)	14.9	12.7	15.1	405	
3	15.8	21.9	15.1	13.1	16.2	558	
4	15.0	22.4	14.2	13.3	15.8	663	
5	15.0	21.1	14.5	12.8	15.6	810	
6	15.0	21.7	13.6	12.5	15.2	973	510
7	15.0	19.0					460
8	12.4	15.7	10.2	10.4	11.8		254
9	6.8	7.9	5.0	5.7	6.1		75

July 18-20—Weather fair but cool.
July 20-22—Weather warm, dry wind.
July 22-26—Weather fair, changing to cloudy.
July 26-28—Weather cloudy, and raining.

The more rapid movement of the center is evident. It also appears that the eastern part of the section moved more rapidly than the western part, and that the point of maximum velocity is in the neighborhood of hole No. 3. This is due to the fact that the glacier is not perfectly straight, but is sweeping around a gentle curve with the convex side to the east. A marked variation of velocity occurs between the different periods, which seems to be caused by changes in the rate of melting due to changes

LATE XXVII.


Western Edge
W. Base.
No.9


No.9.
st
Lateral

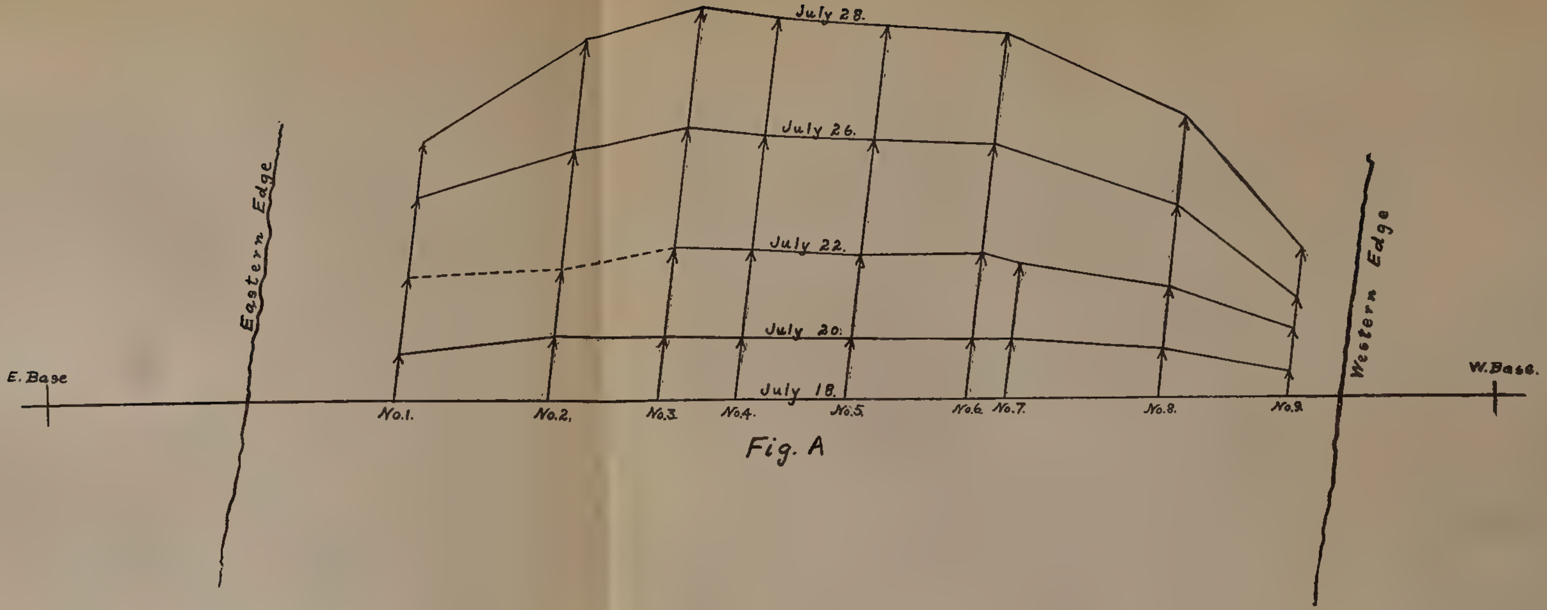

July 28.
July 26.
July 22.
July 20.
July 18.
Eastern Edge
Western Edge
E. Base
W. Base
No.1.
No.2.
No.3.
No.4.
No.5.
No.6.
No.7.
No.8.
No.9.

Fig. A

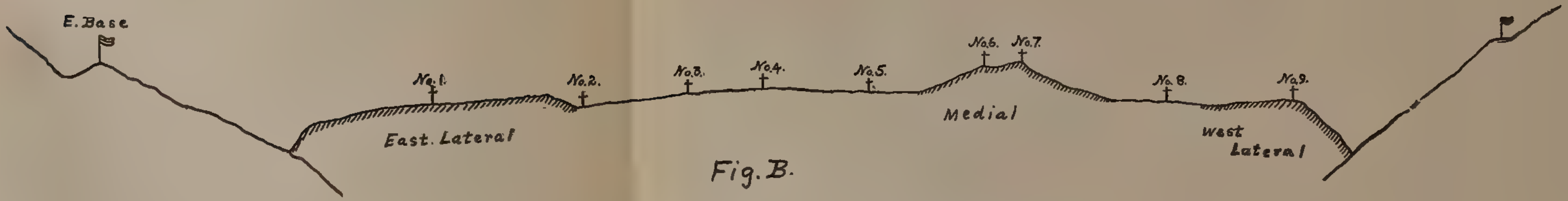
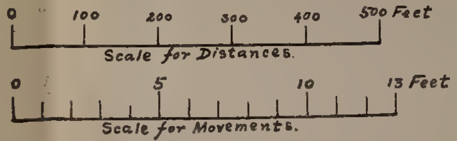

E. Base
No.1.
No.2.
No.3.
No.4.
No.5.
No.6.
No.7.
No.8.
No.9.
East. Lateral
Medial
West Lateral

Fig. B.


500 Feet
Scale for Distances.
13 Feet
Scale for Movements.

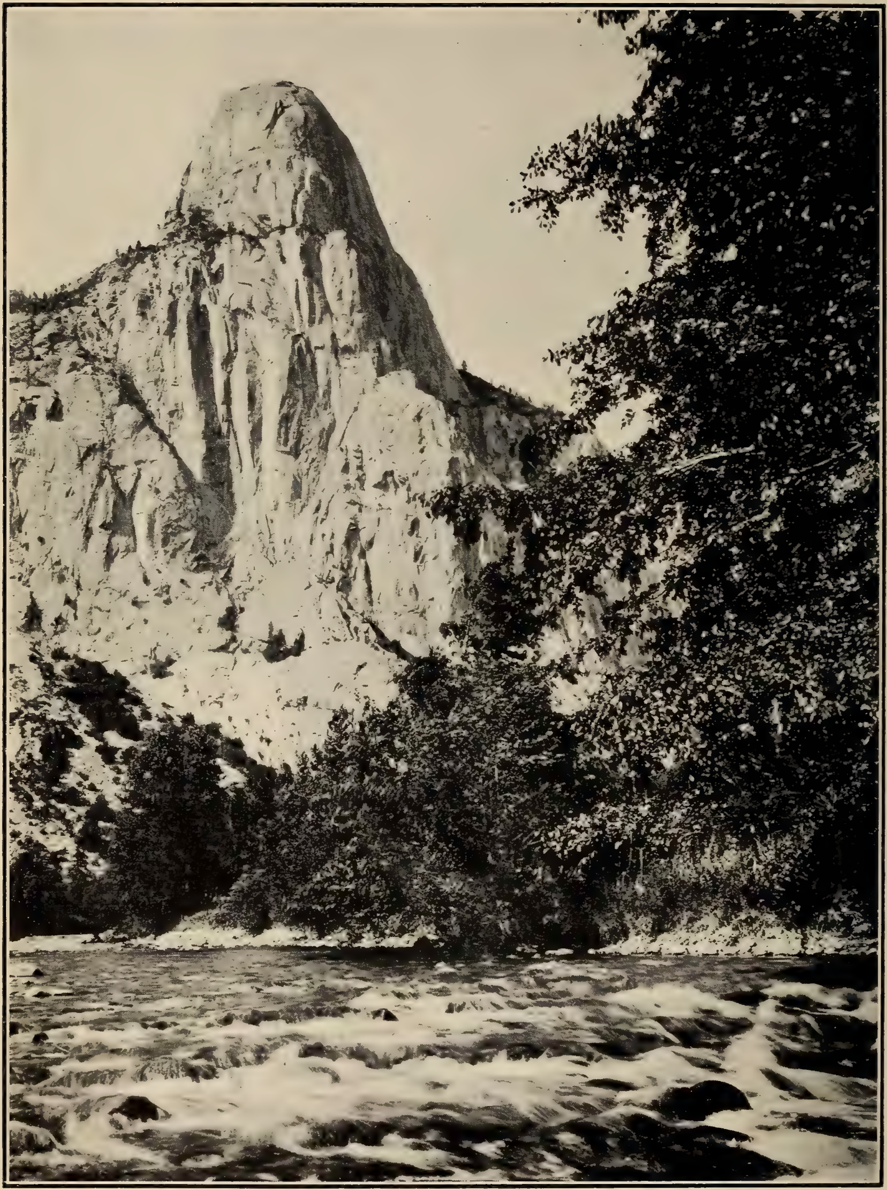
in the weather. The weather had been cold and stormy previous to July 17th. On that day it cleared off, and a reconnaissance of the glacier was made. The holes were bored on the 18th, and between that date and the 20th, when the first measurement was made, the weather continued fine though cool. Professor A. G. McAdie, of the U. S. Weather Bureau, noted a mean temperature of 55° F. on the glacier during the day of the 18th, and the following day was a trifle warmer. The 20th and 21st were warm, clear days, with the temperature on the glacier averaging 70° to 75° F. at noon, and with a strong wind blowing from the north. From the 22d to the 26th, the days were cool and clear (about 60° F.), while from the 26th to the 28th the weather was stormy, with rain much of the time.

In order to ascertain whether or not the upper portions of the glacier moved at a more rapid rate, a sight was taken on July 22d on a large boulder in the middle of the glacier, and about a half-mile above the base-line. It was sighted again on the 28th, at the same time of day, and was found to have moved about nine feet. This gives a mean daily motion of about eighteen inches during the period, but the method is not susceptible of much accuracy.

A rough minimum measure of the amount of surface melting can be obtained from the changes in the depth of the holes. The depth of each was measured when first bored, and whenever deepened. The lateral melting was small, and it is probable also that the melting at the bottom was also small. As there was no freezing at any time during the observations, the surface melting could not have been less than the changes in the depth of the holes. These measurements were so irregular as to show no general law, except a distinct increase on the two hot days above mentioned. The mean rate of surface melting and evaporation thus obtained by twenty-eight measurements on all parts of the line was 4⅓ inches per day, which is probably not far from the true value.

On July 27th a monument was built on a granite ledge near the old trail between Paradise Park and Longmire's Springs, and directly opposite the glacier's snout. This monument was about ten feet to the left and above the trail. The bearing from this point to the end of the glacier was about N. 80° 30′ W., magnetic. The angle included between the end of the glacier and the right-hand edge of Gibraltar Rock was 70° 53′, and between the end of the glacier and the summit of Tumtum Mountain, 54° 00′. It is hoped that this will help future observers to determine something positive concerning the retreat of the glacier's snout.

The writer desires to express his thanks to Mr. James Hutchinson, and other members of the Sierra Club, without whose aid the measurements could not have been made. Also, to Professor Harry Fielding Reid for his kindness in suggesting methods of procedure, and in criticising the results.



TEHIPITE DOME, MIDDLE FORK OF KING'S RIVER.
From photograph by J. N. Le Conte.

REPORT ON THE KING'S RIVER CAÑON AND VICINITY.

To the President of the United States,
To the Secretary of Agriculture, and
To the Forester:

We beg to submit for your consideration the following report:—

This report has been inspired by the grandeur and magnificence of the scenery of the King's River Cañon and the adjacent region. This includes the Tehipite and Paradise valleys and the High Sierra, where the two main branches of the King's River—the South and Middle forks—and their tributaries rise. The Sierra Club has visited this region on two of its annual Outings—in 1902 and again in 1906. Because of its inaccessibility, comparatively little is known of this extensive mountain park which lies in the upper drainage basin of the King's River. At the present time the trip entails many miles of arduous stage-riding and travel over rough mountain trails. However, the Legislature of California, in 1905, appropriated $25,000 for building a road into the main cañon, provided Fresno County would appropriate $12,500 for the same purpose. This has been done, and the work of surveying the line of this road is nearing completion. The road itself should be finished within the next year or two.

The object of this report is twofold. We wish to make this region better known and aid in attracting the attention of the traveling public to it. One of the main purposes of the Club is "to publish authentic information concerning" the Sierra. The other object of this report is "to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features" of the Park and "render them accessible." If we attract the public eye to this wonderful region and induce the Government to assist in making it more accessible and in protecting it from threatened encroachments, we shall have accomplished all that could be desired.

KING'S RIVER CAÑON.

Probably the question oftenest asked of one who has visited the King's River Cañon is "How does it compare with Yosemite?" That it has Yosemite-like characteristics is certain. John Muir, in an article published in the *Century Magazine* for November, 1891, (Vol. XXI, page 78,) points out many of the striking resemblances. Professor Joseph Le Conte, in an article which appeared in *Sunset* for October, 1900, says: "There can be no doubt that King's River Cañon belongs to the same type as Yosemite and Hetch Hetchy. They are all Yosemites,—i. e. valleys with vertical walls and flat floors, as contrasted with the usual V-shaped valleys of mountains generally. In King's River the walls are equally high and equally vertical, and the floor similarly, although not equally, flat."

To compare these two wonderful valleys except in a most general way is as difficult as to compare two great epics, and after all the result would be most unsatisfying. To use Professor Joseph Le Conte's words, "Doubtless, for aggregation of striking features within a limited area, and especially for the splendor of its many waterfalls, Yosemite stands unrivaled, not only in California, but in the world. But there is a peculiar, though gentler, charm also in the foaming rapids so characteristic of King's River and its branches. If Yosemite is far superior in its falls, and also in its extensive meadows and the variety of its foliage, King's River is far superior in its surrounding mountain scenery. King's River Cañon branches and rebranches, becoming deeper and wider and grander until it deploys and loses itself among the highest peaks and grandest scenery of the Sierra."

It is difficult to improve on this brief comparison. One has but to examine the "Yosemite" and "Tehipite" quadrangles (maps issued by the U. S. Geological Survey), in which the respective valleys lie, to appreciate the truth of Professor Le Conte's statement that it is in its surrounding mountain scenery that King's River Cañon is far superior to Yosemite and not in the features of the immediate cañon itself.

The floor of Yosemite is about 4,000 feet in elevation, while that of King's River Cañon is about 4,500 feet. The divide immediately north of Yosemite, which separates the Merced drainage basin from that of the Tuolumne, is composed of rolling granite ridges, for the most part forest covered, and with insignificant points jutting out here and there, none of which much exceed 9,000 feet in altitude. On the other hand, the stupendous Monarch Divide, which towers to the north of the King's River Cañon and shuts it off from the Middle Fork and Tehipite Valley, rises far above the timber-line in a jagged crest varying from 11,000 to 11,500 feet in height, and culminates in Goat Mountain, whose summit is 12,203 feet above sea-level, or more than 7,500 feet above the floor of the cañon. Directly to the south of Yosemite the highest points on the divide do not rise much above 9,000 feet, while there are many points on the corresponding divide south of the King's River Cañon which are over 11,000 feet high. Avalanche Peak is 11,265 feet in altitude, and is but two miles distant from the cañon walls. We have gone thus into detail to indicate to even the casual observer the tremendous advantage the region surrounding King's River Cañon possesses over the similarly situated Yosemite region by reason of the greater depths and heights of the former and its consequent wealth and variety of mountain sculpture.

The King's River Cañon has no falls that compare in grandeur with the Yosemite, Nevada, Vernal, and Bridal Veil of Yosemite Valley, nor any gigantic rock forms that are as wonderful as Half Dome or El Capitan. However, the cliffs of the Grand Sentinel in King's River Cañon compare favorably with anything else in Yosemite, and the Roaring River Falls and Mist Falls of the cañon will not suffer by comparison with any falls in California outside of Yosemite, and are unique, possessing a rare picturesqueness and local color of their own. Mist Falls in particular are as remarkable an exhibition of dashing spray, leaping foam, and driving mist as can be found anywhere.

In short, Yosemite and the King's River Cañon are both tremendous valleys sunk in the middle of the including drainage basins of each; but while the Yosemite is by far the more wonderful valley, the surrounding mountain-peaks which guard the King's River Cañon to the north and south tower in imposing masses almost 2,000 feet higher above its floor than do the corresponding and less impressive points which delimit the Yosemite drainage basin.

PARADISE VALLEY.

Proceeding up the South Fork, or Paradise branch, of the King's River, which turns at almost a right angle at the head of the main cañon, we pass several beautiful falls, including Mist Falls, and after a lively scramble over talus from the inclosing cliffs, and through brush, the lower end of Paradise Valley is reached in the short space of three miles. This valley in many respects bears a similar relation to the King's River Cañon that the valley of the Little Yosemite does to the main Yosemite. It is about three miles in length, having rather a narrow floor, carpeted with several charming velvety meadows through which winds the crystal river, forming at every turn emerald pools that make the fisherman's heart beat with thought of the trout that might lurk in their depths. Beautiful groups of fir and pine are scattered throughout. The walls of this valley are Yosemite-like and are flanked on the west by Goat Mountain and on the east by Mts. King and Gardiner, each nearly 13,000 feet in altitude. Over these walls several streams tumble in fantastic lace-like cascades.

At the extreme head of the valley a rocky knoll juts out from the westerly wall. From its summit is a view that for comprehensiveness and grandeur it would be difficult to duplicate. It stands at the junction of three immense cañons—the Paradise Valley, the Paradise Gorge, and Wood's Cañon. Immediately opposite tower the castellated cliffs of the Muro Blanco, over which pours Arrow Creek in zigzag cascades of foaming water and iridescent spray. The sources of the Paradise River are in an almost unknown and inaccessible region of lakes, meadows, and towering peaks.

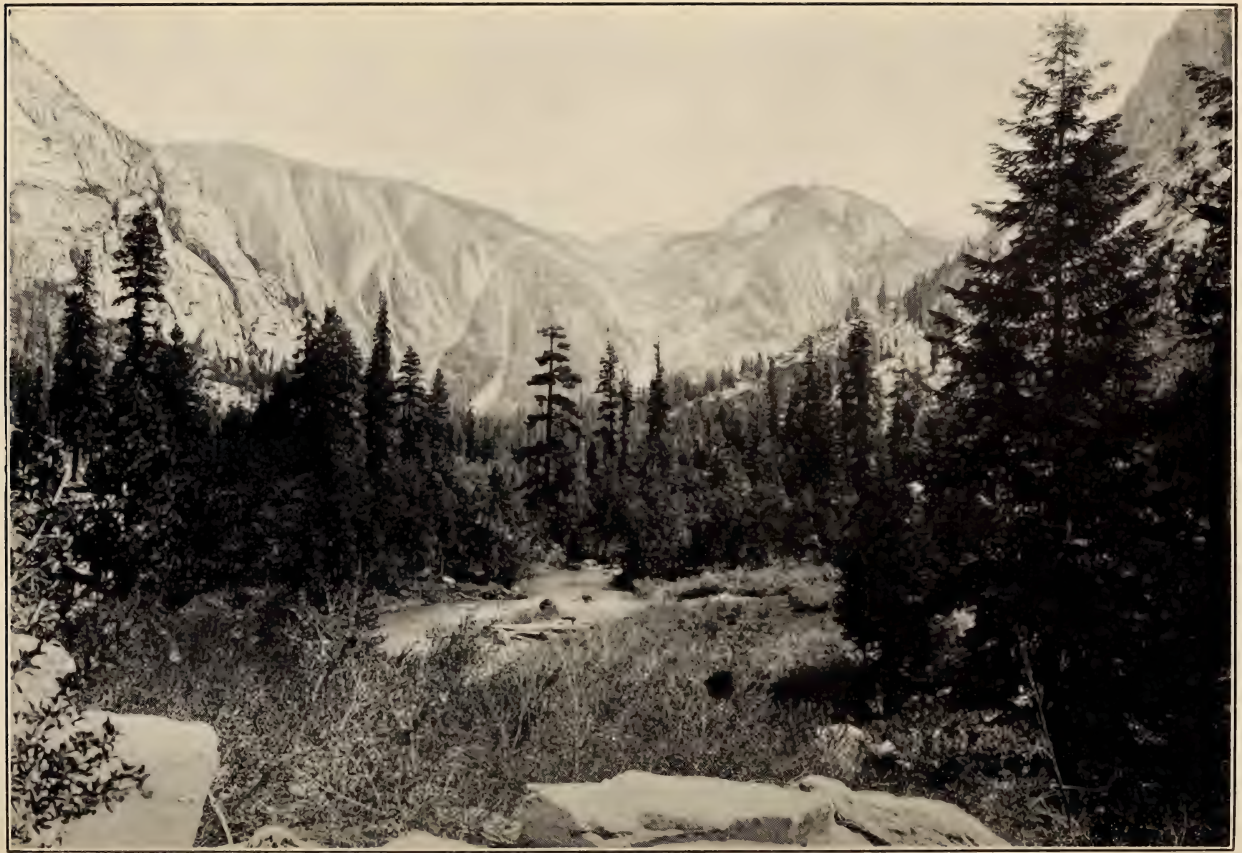
THE BASIN OF WOOD'S CREEK.

Leaving Paradise Valley and following up Wood's Creek past Castle Domes, one finds that its various branches rise amid a bewildering maze of lakes. One of the branches of the South Fork of this creek heads in Sixty Lake Basin while the South Fork itself flows through a succession of the most exquisite bodies of water of the richest and deepest sapphire imaginable. The uppermost of these is Rae Lake, over a mile in length, and situated in an amphitheater of encircling peaks which range from 12,000 to 13,000 feet in height. Fin Dome, Mt. Rixford, Black Mountain, and Diamond Peak seem almost to overhang the lake with their gigantic bulk; their dark, threatening cliffs, streaked with snow and mirrored in the lake at their base, make a picture as sublime as any to be found in the whole Sierra.

THE BASIN OF BUBB'S CREEK.

Crossing Glenn Pass (12,000 ft.) with the trail in its present condition is not an easy task, but it can be made passable without great expense, and to enter in this way the Basin of Bubb's Creek and its tributaries is well worth the effort. The trail drops down to Lake Charlotte and thence over a low divide to Bullfrog Lake, where it branches, and one may cross the main crest of the Sierra at the famous Kearsarge Pass and descend to Independence. The scene from the vicinity of Bullfrog is of wildest grandeur. University and Stanford peaks, Crag Ericson, Mt. Brewer, and nameless others, rise to a height of nearly 14,000 feet, and East Lake and Lake Reflection are not far from the trail down Bubb's Creek Cañon, which brings one back into the main King's River Cañon.

It is no exaggeration to state that the scenery which one finds on the round trip just described is as wonderful as exists any-



PARADISE VALLEY, LOOKING UP TOWARD MURO BLANCO AND ARROW CREEK FALLS.

From photograph by J. N. Le Conte.

where within the same limits, and we predict that this trip is destined to become one of the most famous in the entire Sierra.

ROARING RIVER BASIN.

The Roaring River Basin, which tumbles its waters over the falls into the King's River Cañon, is inaccessible from this direction, but can be readily entered from the west. One can easily spend a delightful summer in this basin, visiting its meadows, falls, lakes, cañons, and peaks, and Mt. Brewer, from the summit of which one of the most comprehensive views of the High Sierra can be obtained, is quite accessible from this side.*

THE MIDDLE FORK OF KING'S RIVER.

The major portion of the basin of King's River north of the Monarch Divide is drained by the Middle Fork and its tributaries. This stream is very nearly the same size as the South Fork, and the region through which it passes is the wildest, most magnificent, and difficult of access of any portion of the Sierra. The main cañon of the Middle Fork is about twenty miles in length. Near its upper end is the beautiful Simpson Meadow, the garden-spot of the southern Sierra. Twelve miles below this is the Tehipite Valley, the Yosemite of the Middle Fork. Here the stream has cut a cañon nearly 4,000 feet deep, with splendid clear granite cliffs. The Tehipite Dome on the north wall is the finest rock face to be found in the Sierra outside of the Yosemite Valley itself. It ranks second to El Capitan and Half Dome alone, and in many respects is not their inferior. It rises as a clean-cut, absolutely vertical precipice, 3,700 feet from the river to the top of the perfect hemispherical cap. The cañon between this valley and Simpson Meadow is fine throughout its entire extent, and it would be largely frequented by tourists were it not for the roughness of the trails.

THE HIGH SIERRA OF THE KING'S RIVER REGION.

The Middle Fork heads in a vast quadrilateral area between the Main Crest and the Goddard and Woodworth divides, all of which ranges are practically impassable to pack-animals. Through the middle of this it has cut a profound cañon from its fountainhead near Grouse Valley to its lower reaches near Simpson Meadow. This cañon is now entirely impassable to pack-animals. The mountains about the head of the river are among the highest in the State. Mt. Goddard (13,602 ft.) and the grand array of the Palisades, which average from 13,700 to 14,200 feet, are the finest. The southern extremity of this latter range terminates at Split Mountain (14,076 ft.) near the point where the Monarch Divide joins the Main Crest. South of this is the great wilderness of the South Fork, where the peaks are scarcely inferior in height to those of the Middle Fork. The stream rises in an extremely elevated basin near the base of the South Palisades, and finally falls into a beautifully timbered valley to the north of Arrow Peak. From this it breaks through a deep gorge to pour into the upper end of Paradise Valley. The mountains in this region have been but little explored, owing to its inaccessibility. South of Mt. Pinchot (13,471 ft.) the drainage is tributary to Wood's Creek, and the region is somewhat easier of access on account of the old sawmill trail which follows up its gorge. South of Wood's Creek is Bubb's Creek, whose remarkable scenic features have already been touched upon.

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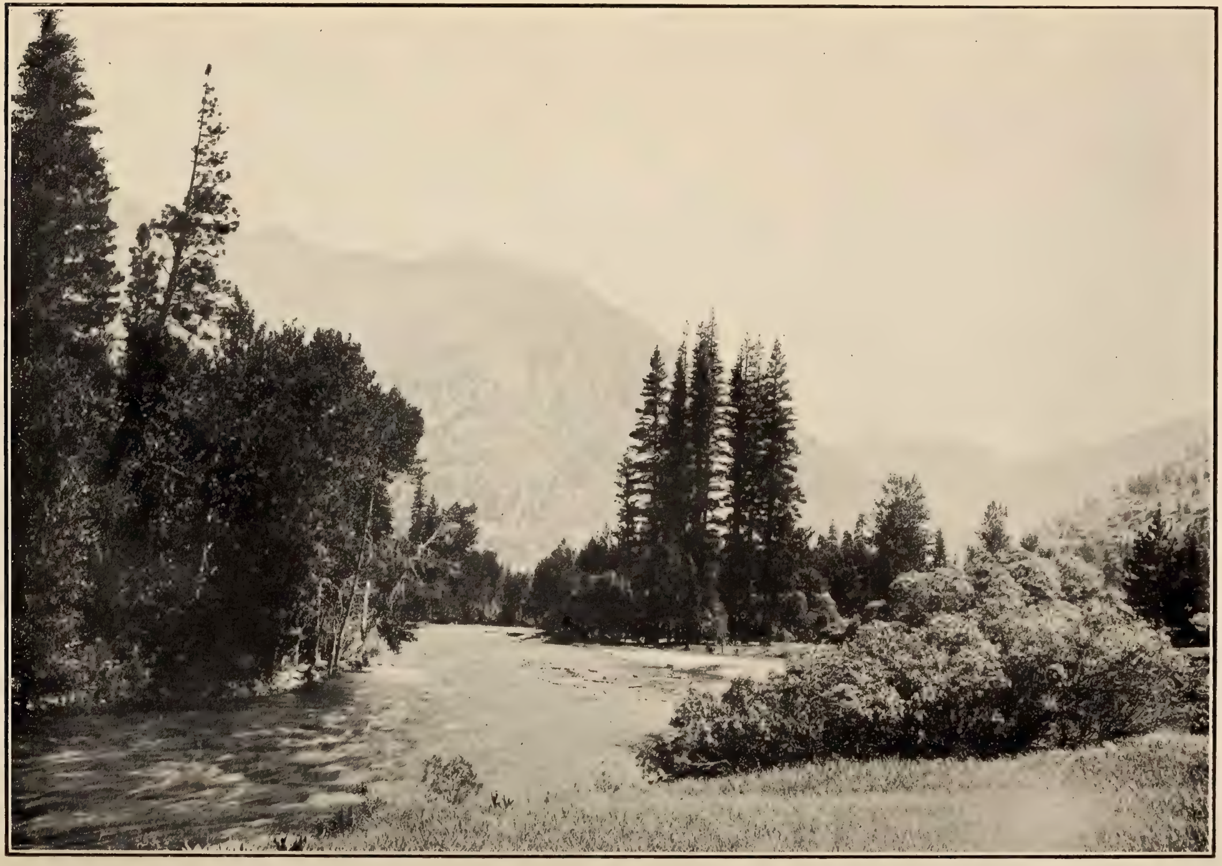
*See Stewart Edward White's recent book, entitled "The Pass," which describes this region.

ROUTES OF TRAVEL.

Sanger-Millwood Route.—This is the route most generally traveled for reaching the cañon. The Southern Pacific Railroad takes one (via Fresno) to Sanger. From this point the King's River Stage Company (R. H. Gallagher, manager) runs a stage line to Millwood, forty-five miles distant. Millwood is a lumber camp situated at an elevation of about 5,000 feet, where there is a small general merchandise store. P. A. Kanawyer runs a pack-train from Millwood into the King's River Cañon, which is about thirty-five miles distant by either the upper or lower trail. Mr. Kanawyer will provide parties with pack-animals and outfit, and one may board at his camp in the cañon during the summer months. On the way to the cañon and but a little over a mile from Millwood is the famous General Grant National Park, containing a fine grove of sequoia, or big trees. The General Grant is one of the most perfect and largest specimens living. The lumber-mill in this vicinity is well worth visiting. It handles the largest logs in the world, some of them being over twenty feet in diameter. However, it is heart-rending to see these monarchs of the forest, which have stood for millenniums, cut down in their prime.

Visalia-Giant Forest Route.—Another way to reach the cañon is to leave the railroad at Visalia, take an electric line to Lemon Cove, and thence travel in Broder & Hopping's stage to the Giant Forest. Broder & Hopping maintain a camp at the latter point, and will outfit parties desiring to visit the cañon. The Giant Forest and vicinity is a wonderful region, but it will not be described here, since it is the intention of the Club to in-



SIMPSON'S MEADOWS, MIDDLE FORK OF KING'S RIVER.

From photograph by J. N. Le Conte.

corporate a description of it in a report on the Kern River Cañon, which will be issued in some future year.

Visalia-Big Meadows Route.—There is a road, also leading from Visalia, which takes one into the Big Meadows, but the upper end of this road is not in the best of repair, and there is no stage-line operating on it. Big Meadows is only ten or twelve miles by trail from the King's River Cañon, and though travel by trail is so materially shortened, this route is seldom used.

Independence-Kearsarge Route.—The King's River Cañon can also be reached by trail via Independence and Kearsarge Pass (nearly 12,000 feet in elevation); but this pass can seldom be crossed earlier than July on account of the snow.

THE STATE ROAD.

Most of the routes by trail will be abandoned upon completion of the new road into the cañon. This will follow the general route of the Lower trail from Millwood via General Grant Park and Long Meadow until it crosses Ten-Mile Creek. From this point it will descend to the main King's River, which it will cross by bridge just below the mouth of Boulder Creek. It will then follow up the north side of the river, keeping near it until it reaches the King's River Cañon proper.

The Chairman of this committee recently had a conversation with Mr. Ellery, State Highway Commissioner, who has charge of the construction of this road, and Mr. Ellery stated that the survey was nearly complete, and that the actual construction of the road would be commenced early in 1907, and would probably be complete some time in 1908. Mr. Ellery was very enthusiastic over the route selected, stating that the scenery in the main gorge of the King's River in the vicinity of the proposed bridge below the mouth of Boulder Creek was as magnificent as any he had ever seen. Limestone cliffs of dazzling whiteness descend sheer into the river, while the tremendous cañon and foaming rapids of the river itself will make this mountain route famous for its picturesque beauty. When completed, this road will open up and make accessible to the traveling public all the wonderful scenic features of this wild mountain park.

THE FOREST SERVICE.

The entire region which has been described in this report is embraced in the Sierra Forest Reserve. The public is to be congratulated that this region has for these many years been under the wise protection of the forest reserve system, which has been brought to its present standard of excellence through the able management of Mr. Gifford Pinchot. The bands of sheep which once rendered desolate and barren the beautiful mountain meadows and valleys have long since been excluded, and the flower-gardens and lawns of the High Sierra are again flourishing in their pristine beauty. Mr. Charles H. Shinn, Forest Supervisor, and, under him, Mr. McLeod, Head Ranger of the King's River region, and his assistant rangers, are doing most excellent work along the lines of duty laid down by the forest service. Mr. Shinn especially has grasped the spirit of the reserve, and is doing splendid work in harmonizing the various interests which exist within the reserve.

FOREST RESERVE OR NATIONAL PARK?

While we, as members of the Sierra Club, which aided in the establishment of the forest reserves, appreciate to the fullest extent their great value, yet we feel that this entire region embraced in the upper drainage basin of the South and Middle forks of the King's River, or at least the greater portion of it, should be placed on the same basis as other lands which are embraced within National parks. Whether it should be made a National park in name or whether it should remain a part of the Sierra forest reserve is not vital. The desired results can just as well be obtained, for the present at least, under the efficient supervision of the present forest reserve management.

The only question which can possibly arise in this connection is as to whether the present forest reserve system is intended to provide for the situation which confronts us in relation to the King's River Park. As we understand the reasons for the establishment of the forest reserves, they are to aid in conserving the forests and water and grazing areas of the lands which they include, and to supervise their use, having in view the best interests of the public at large. As we understand it, the reserves have been established for utilitarian purposes only, and in order that the timber may be cut and the water used for power and the grazing land be pastured to the best possible economic advantage. In other words, their object is primarily commercial in its nature.

On the other hand, we feel that in the case of most of the area described in this report the commercial element should be eliminated almost entirely if not absolutely. The scenery of the region described is by far too wonderful and sublime to permit of the destruction or alteration of any of its component parts. No portion of the forests should be cut for lumbering purposes, and in fact most of it is too inaccessible to be commercially valuable; the beautiful falls should not be despoiled for power purposes, nor should the limited grazing area be used by others than the campers and travelers who journey thither to view the natural wonders of the park. In this limited region the æsthetic and scenic features are of paramount importance. Their commercial value even, in attracting the countless numbers who some day will visit this scenic area, will outweigh all other considerations. This area should be permanently set aside "for public use, resort, and recreation." The wild animals within its borders should also be preserved as they are in National parks. Whether all this can be accomplished under the existing forest reserve laws and regulations, and sufficient protection afforded, is a question the determination of which can best be left to the officials directly concerned. In view of the fact that it seems highly probable that the management and care of the National parks will be transferred to the Department of Agriculture in the near future, this question may readily solve itself.

We do not wish to be misunderstood and to arouse unnecessary opposition on the part of private owners, who might get a false idea of just what we wish to accomplish and who might imagine that we were attempting to impair their rights. At the present time we have in mind the creation of a park area which shall not extend much farther west than the lower end of the "King's River Cañon" and of the Tehipite Valley, and which shall embrace the major portion of the drainage basin of both the Middle and South forks of the King's River to the east of these points.

RECOMMENDATIONS.

Aside from our main recommendation that this region be set aside as a park area, there are several minor suggestions which we most respectfully present to the Forest Service and request that favorable action be taken thereon and that the suggestions be carried out in the near future. It is most desirable that this should be done before the State road has been completed.

1. We consider of utmost importance the construction of a trail leading from the King's River Cañon up to Paradise Valley, following along the north side of the river. By constructing this trail of some three miles in length, the necessity of a detour of nearly ten miles and a climb of nearly 4,000 feet will be obviated. While portions of this trail will be expensive to construct, it is very short, and the difficult sections constitute only a small part of the entire length. It will open up a most wonderful region, and its importance cannot be too greatly emphasized. A bridge should also be constructed in Paradise Valley over the main river a short distance above the mouth of Wood's Creek.

2. We recommend the construction of a permanent bridge over the main King's River in the vicinity of Cedar Grove, to replace the one which was carried away by the high water of 1906. We are informed that such a bridge is in the course of construction.

3. The construction of a permanent bridge over the King's River just above the mouth of Bubb's Creek is eminently desirable. It is the logical point for the construction of a bridge, and will obviate the necessity of fording Bubb's Creek and will greatly improve the trip to Kearsarge Pass.

4. It is desirable that a bridge across the main river be placed near where the old bridge formerly crossed, just opposite Kanawyer's cabin. This bridge is necessary in order to make the Grand Sentinel accessible.

5. A direct trail from the King's River Cañon to Mt. Whitney should be built. The highest mountain in the United States is so attractive that many wish to visit it from this region, and this trail will serve the double purpose of making the Kern Cañon accessible as well. It has been suggested that such a trail should be made up the gully to the east of the Grand Sentinel, and after crossing the high region directly to the south of the King's River Cañon, most of which is open country, the trail should then drop into Cloudy Cañon and join the trail leading up to the head-waters of this cañon, and, after crossing the divide, drop down the cañon of either the Kern-Kaweah or the Big Arroyo (whichever might be found most feasible) and join the present Mt. Whitney trail in the Kern Cañon not far from where it ascends the eastern wall.

6. In order to render the Tehipite Valley accessible, it is recommended that prior to the completion of the State road a trail be constructed from the point on the north side of the King's River where the road crosses the river and thence down the north side of the river till it reaches the point of junction of the Middle and South forks, and thence up the south side of the Middle Fork until it reaches the Tehipite Valley. A bridge should be constructed over the Middle Fork in Tehipite Valley. We are informed that the greater portion of this trail is already in existence, and that the portion toward Tehipite only will have to be built. Another bridge should ultimately be placed across the Middle Fork between Tehipite Valley and Simpson's Meadow.

7. In view of the fact that Mr. Shinn informs us that he has persistent applications for permits to pasture stock in Paradise Valley, we desire to place ourselves on record as unalterably opposed to the granting of any such permits. The time is not

far distant when the idea of pasturing cattle in Paradise Valley will be as unthought of as it would be now to have them pastured in Central Park.

8. Since the amount of trail work and construction of new trails necessary to properly open up and render accessible this wonderful region is so great, we would recommend for the most careful consideration of the Forest Service the establishment of a permanent crew of trail-makers who should have the work of constructing and repairing trails and building bridges as their sole duty, and to be called out to fight fire only in case of extreme necessity.

In making the foregoing recommendations, we feel that for the greater part they are improvements directly in line with the proper development of the forest reserve, and will all tend to make the reserve itself more accessible and more easily patrolled. Respectfully submitted.

WM. E. COLBY, *Chairman,*
J. N. LE CONTE,
E. T. PARSONS,
Outing Committee.

Published by order of Board of Directors of the Sierra Club.

[NOTE.—Mr. John Muir has read the foregoing report, and, with the exception noted, it meets with his "hearty approval." He further states that "every possible aid and encouragement should be given by the Club for the preservation, road and trail building, etc., for the development of the magnificent King's River region." He does not approve of that portion of the report, however, "in which the Yosemite and King's River regions are compared," thinking that the comparison is somewhat "unjust" and "one-sided." The report was already in press, or it would have been modified in this particular, and this note has been inserted so that Mr. Muir's views on the subject should not be misrepresented by an unqualified indorsement.]

NORTHFORK, MADERA COUNTY, December 28, 1906.

SECRETARY SIERRA CLUB, San Francisco.

Dear Sir: I have been asked for some notes on the King's River region, from the standpoint of the Forest Service, or rather from that of the local officers.

We are entirely in sympathy with the Sierra Club in every effort to make the mountains more accessible and to preserve the natural beauties of our scenery. The region reported upon by the Club is mainly so precipitous and so devoid of timber or large grazing areas that it can easily be handled as a strictly tourist region.

The Forest Service does not propose to allow the grazing of sheep in the great area between the Middle Fork and South Fork of King's River. Cattle have already been excluded from Roaring River and Cloudy Cañon, also from Bubb's Creek to the summit. In fact, the only live-stock at present using meadows in this region are pack-trains and saddle-horses.

It is fortunate, I think, that the leaders of the new American forest movement are men of broad culture as well as of business training. In Washington, as well as here in the Sierra Reserve, there has never been any difference of opinion respecting the fundamental principles of reserve management.

Briefly, we aim at a wise and careful balancing of closely related interests. The reserves must be made self-supporting; the forests must be maintained, improved in quality, increased in area; the multitude of local industries, such as grazing, which were established before the reserves, must be considered. All these taken together make up the commercial side of reserve work, and secure the livelihood of thousands of American citizens. Any reckless or too sentimental interference with this side of reserve work by well-meaning lovers of outdoor life would result in an upheaval which in the end would go far towards ruining not only the reserve system but the National park system.

But over and beyond all the commercial interests involved, foresters and the reserve leaders recognize our full responsibility as guardians of the High Sierra. It is our duty as well as our happiness to keep inviolate for all time to come, as far as the many interests involved will permit, the real mountain land where the tired people of great cities and throbbing valleys can come and find rest.

There is ample room in the reserves for the fostering of every possible interest involved. There are broad acres which distinctly belong to tourists, campers, and friends of the wilderness. To the reasonable withdrawal of such areas from grazing, the stockmen make no objections,—the meadows are too small and the mountains too rough and too distant for profitable use. As the number of tourists increases, the areas which they need will enlarge. The building of hotels, cabins, etc., will in time use much of the scattered timber which is unprofitable from the commercial standpoint. The tourist travel itself will in time yield a sufficient income to construct the necessary roads and trails and bridges. It will be proper to charge for licenses to take in pack-trains, to run hotels, and to shoot game.

Every now and then the view is expressed in print that the reserves are likely to be run more and more for merely commercial reasons. On the contrary, as I wish to point out, the reserves are able to develop a large income from timber and grazing resources, and therefore are especially well fitted to maintain and improve suitable tourist areas in wild regions unfit for commerce. In looking at these things, we must utilize the trained imagination so as to understand what fifty years of growth will do for the Sierra.

A park within a reserve would virtually be a case of divided authority, and it is not seriously proposed by any one. The whole reserve idea is based on the preservation of natural beauties, as well as on the wise development of commercial enterprises.

It seems to me especially desirable to have all the tourist elements brought closer together, allotted local areas, and made more definitely responsible for the results. I do not now refer to the thousands of campers and cottagers who more and more gather each summer in the timber belt or about cattle camps or near sawmills, or here and there by little meadows. These people come from the valley, and really become a part of the daily life of the reserve, sometimes for many months. But the country that Stewart Edward White writes of in "The Pass," that Muir, Le Conte, and all the rest of your Club have climbed over, can be made to belong to those whose vacations are brief and whose organization is of a higher type. It will be a sad day for the Sierra Forest Reserve if its officers ever lose the good will and hearty co-operation which the Sierra Club and kindred bodies have ever given.

Very sincerely,

CHARLES H. SHINN,
Supervisor Sierra (N) Reserve.

SIERRA CLUB BULLETIN.

PUBLISHED JANUARY AND JUNE OF EACH YEAR.

Published for Members. Annual Dues, $3.00.

The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

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REPORTS.

REPORT OF THE CUSTODIAN OF LE CONTE MEMORIAL LODGE, YOSEMITE VALLEY.

During the summer of 1906 the Le Conte Memorial Lodge was open to the public from May 22d till July 22d. It was not until June 15th, however, that visitors to the valley were numerous enough to enjoy the hospitality of the lodge even in moderate numbers.

There were two reasons why people did not go to the valley during early summer. The principal one, of course, being the earthquake, and also the unusually long and wet spring.

Not until June 14th was Glacier Point trail opened, and Eagle Peak was not accessible until a week later. Snow clung to the rim of the valley until July 1st, and it was not possible even to reach Lake Tenaya, except on foot over frozen snow, on August 1st.

The lodge was open daily, except Sunday, from 9 A.M. till 9:30 P.M., and during the greater part of the season a cheerful fire blazed in the Titan fireplace every evening.

The custodian was ably assisted by his wife in entertaining guests, and the promotion of the Sierra Club and its aims were sought rather than the mere conducting of a library. To that end personally conducted trips were taken every Sunday, and frequent visits made to parts of the wonderful valley that few people visit. Evenings of entertainment around the blazing fireplace, with pop-corn and lemonade, often enticed a number of visitors.

During the latter part of the summer the number of visitors increased greatly, and at the time of closing there were many more people in the valley than had been during the months of May and June. The closing of the lodge was a cause of general regret.

With the advent of the new railroad, Government control of the valley, and the consequent rise of importance as a pleasure resort, it will not be extravagant to improve the interior furnishings of the lodge by installing new furniture in keeping with the structure; by adding to the selection of books and magazines; by piping fresh water to satisfy the frequent requests of visitors;

by furnishing a supply of firewood for the earlier months of summer; and by lengthening the season to four months.

The thanks of the Sierra Club are due Mr. F. O. Popenoe, of Los Angeles, for a year's subscription to the *Pacific Monthly;* to Mrs. John Sexton, of Santa Barbara, for a supply of current magazines; and to Miss Hope Loughborough, of Little Rock, Arkansas, for a copy of "The Mountains," by Stewart Edward White.

Respectfully submitted,

J. J. Rhea, *Custodian.*

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is at 2901 Channing Way, Berkeley, where all the maps, photographs, and other records of the Club are kept, and where members are welcome at any time.

The Club would like to secure additional copies of those numbers of the SIERRA CLUB BULLETIN *which are noted on the back of the cover of this number as being out of print, and we hope any member having extra copies will send them to the Secretary.*

SCOTTISH MOUNTAINEERING CLUB,
20 GEORGE ST., EDINBURGH,
May 31, 1906.

SECRETARY SIERRA CLUB, San Francisco.

Dear Sir: Your circular of 10th received. May I offer you the sincere sympathy of the S. M. C. in the loss of your records, books, etc., and express the hope that the trouble you are experiencing will soon be in the past?

If your copies of the *S. M. C. Journal* have been destroyed, can we show our sympathy in a practical way by sending you copies of those issues we have still in print?

Kindly say, and mention what numbers you had, if possible.

Yours very truly,

W. E. COLBY, ESQ. F. S. GOGGS, *Honorary Librarian.*

LONDON, May 29, 1906.

SECRETARY SIERRA CLUB, San Francisco.

Dear Sir: I have returned to town for a few days, before leaving for the Continent, and find your Circular No. 31 amongst my letters.

I hasten to assure you of my entire sympathy. The Club has been tried by fire, but it will, I hope and believe, emerge from the ordeal stronger than before.

If I can, by sending out copies of my own books, or can in any other way assist in the restoration of your library, you have only to command me.

Very truly yours,

W. E. COLBY, ESQ. EDWARD WHYMPER.

PORTLAND, OREGON, May 23, 1906.

TO MEMBERS OF THE SIERRA CLUB, GREETING:

Mazamas have heard with profound regret of the awful calamity that has been visited upon our sister city San Francisco, and our hearts go forth in deep and enduring sympathy to residents of that glorious monument of human progress, the great city by the Western sea, but deeper by far does our sympathy go to those of kindred thoughts and impulses, lovers of the beautiful and grand in Nature, to whom a more tender tie binds our hearts, and the Executive Council has instructed me to convey to you that which words cannot convey, hence, I can only add:—

Down deep in our hearts there lingers a tenderness of sympathy and love for the Sierra Club that can meet a response only in hearts oft overflowing with mountains' sacred influences, so we expect you to catch from us that spark of sympathy inspired that will break forth within you a responsive flame of appreciation. Your printed records are gone and cannot be replaced, but your heart's work will go on forever. The seeds you have sown will spring up and bear fruit a thousandfold, and the world will be better for you. You will rise from the ashes of your city a greater organization, a greater power for good than you ever would have been without the scourge of fire.

If by word or by deed the Mazamas can aid you, it will be a rare privilege, and we will appreciate the opportunity and exert ourselves to rise to the occasion and prove ourselves worthy to serve you.

Very sincerely,

WILL G. STEEL, *Cor. Sec. Mazamas.*

NEW YORK, May 28, 1906.

SECRETARY SIERRA CLUB, San Francisco.

Dear Sir: All friends of mountaineering are deploring your recent club losses. Later I may send you a few books towards a new club library. Here is a check for $50, as my dues to become a life member. Much is expected from the present spirit of San Francisco. We look for a Sierra Club, revived and invigorated, overcoming its difficulties with the climber's patient tenacity. May you soon emerge from these present misfortunes, with added numbers, and still higher mountaineering spirit!

The hopes and good wishes from the East are with you.

Sincerely,

W. E. COLBY, ESQ. HARRINGTON PUTNAM.

Appalachian Mountain Club,
Boston, Mass., April 27, 1906.

Secretary Sierra Club, Berkeley, Cal.

Dear Sir: Your letter of recent date stating that your records had all been lost in the awful earthquake and fire in San Francisco, and giving your temporary address, was duly received.

My first impulse on learning of the calamity which overtook your great city was to wire you at once our sympathy and eagerness to assist in every possible way. But when I found that telegrams were being held up in Chicago by the thousands, it seemed best to wait until we could learn your home address, which I believed to be outside of the city.

At a meeting of this Club, held in Boston on the evening of April 24th, it was voted:—

> "That a special committee be and is hereby appointed, to consist of Professor Charles E. Fay, chairman, the president, Mrs. Lucinda W. Prince, Mr. J. H. Emerton, and Mr. W. A. Brooks, to extend at once the sympathy of this Club to the Sierra Club of San Francisco in the terrible calamity which has befallen their city and their Club, and to consider what, if anything, the Appalachian Mountain Club can do to assist the Sierra Club, and report recommendations to the Council."

That committee met to-day and voted that the president should at once wire you of our interest, and follow the telegram with this letter.

Accordingly I have wired you to-day at the above address as follows: "Appalachian Club sends sympathy and desires to help Sierra Club. Letter follows."

As individuals we have all been doing what we can for the stricken city and its people as a whole. As a Club we desire to aid our Sierra Club brethren in every possible way to re-establish themselves.

We beg that you will inform us exactly as to your Club's situation, and suggest to us in what manner we can best aid you.

We will of course replace the full set of our magazine if you desire it, and can perhaps otherwise aid in restoring your library. Is there anything else that we can do?

It had been feared that your summer trip into the mountains would have to be abandoned, and we are overjoyed to note that you state in your letter that the plans will be carried out in the main.

It was learned here to-day that the educational convention for the summer had been practically abandoned, and that the railroads were intending to cancel the attendant reduced rates. This, I regret to state, will doubtless have its effect upon the size of the delegation that this Club might otherwise send to join you on your expedition.

All success to San Francisco and to the Sierra Club is our hearty wish. Your indomitable courage amid such great adversity commands our highest admiration. We are all Californians as we are all Americans, and we will build together a fairer San Francisco upon the ruins.

Fraternally yours,

W. E. COLBY, ESQ. ALLEN CHAMBERLAIN, *President.*

OFFICE OF THE FORESTER,
WASHINGTON, May 24, 1906.

SECRETARY SIERRA CLUB, San Francisco.

Dear Sir: Many thanks for your letter of May 19th. I appreciate most heartily your kind and repeated invitations to take part in the Outings of the Sierra Club. This summer I had counted on going with you to the King's River Cañon, but now it seems unlikely that I shall have that pleasure. Important legislation in which the Forest Service is directly interested is pending in Congress, so that it will be necessary for me to be here during the closing days of the session, and I am afraid that adjournment will come too late for me to get out to California in time for the Outing. I wish most heartily I could come and I am exceedingly sorry that the chances are against it.

Let me thank you also for what you are good enough to say about the Yosemite Recession Bill. I hope strongly that it may pass.

We are all feeling very enthusiastic about the admirable spirit in which the San Francisco people are trying to recover from the results of the earthquake. I need not say that if there is any way in which the Forest Service can help I shall be particularly glad.

Very sincerely yours,

GIFFORD PINCHOT, *Forester.*

BOOK REVIEWS.

Edited by William Frederic Badè.

"Western Tibet and the British Borderland."

The attention of mountaineers with money and leisure is increasingly turning to Tibet. Until recently no Europeans except a few Moravian missionaries had entered this forbidden country. Even these had not penetrated far beyond the border. But during the last decade Great Britain has been more aggressive in the assertion of her suzerain rights along the western frontier of Tibet, even going to the length of sending a military embassy to the capital. It is not surprising, therefore, that the best recent literature on Tibet should have been produced by Englishmen with an exploring turn of mind. Notable from every point of view is a book* that has just come to the reviewer's table from the press of Edward Arnold (London), publisher to the India office. Its title, *Western Tibet and the British Borderland,* sufficiently describes the scope of the work. As Deputy Commissioner of Almora, the author, Charles A. Sherring, evidently made good every facility for exploration. One hundred and seventy-five photographs of uncommon excellence illustrate the text. One chapter, written by T. G. Longstaff, a member of the Alpine Club, describes an attempt to climb Gurla Mandhata (altitude 25,350 ft.). This account will be of particular interest to members of the Sierra Club. Mr. Longstaff was accompanied by two Alpine guides from Courmayeur. Among the adventures of the trio was a fearful ride on a snow avalanche which carried them down a thousand feet and lodged them on a somewhat gentler slope. The following night they spent in a hole in the snow at an altitude of more than 23,000 feet. The writer considers their escape miraculous, and moralizes as follows: "I think we were to blame in having ventured to descend any steep Himalayan snow-slope after the sun had been on it all day, especially as most slopes in these mountains are really steeper than they look. In the Alps the reverse is usually the case, while the snows of the Caucasus take an intermediate position." Mr. Sherring's style is not highly literary, but he narrates so well that the reader's interest never flags for a

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***Western Tibet and the British Borderland.* By Charles A. Sherring, M. A., F. R. G. S. London: Edward Arnold, Publisher to the India Office. Pp. 367.

moment. The chapters cover a wide range of topics: e. g., "Bhotia Marriage Customs," "Tibetan and Bhotia Death Ceremonies," "Religion and Government in Tibet," "Mansarowar and Kailas, the Abode of the Gods," "The Passes to Western Tibet," and "Customs of the Western Bhotians," "A Tibetan Trade Route," etc. A number of excellent maps are included in the volume. Many an interesting incident is woven into the narrative. It would be hard to find anything more unique than the author's account of the manner in which a hundred Tibetans, armed only with stones and axes, hunted down and slew a man-eating tiger. On the whole, it would be difficult to find a more readable book on the mountains, people, and customs of Tibet.

W. F. B.

"THE VOICE OF THE MOUNTAINS."

It is a choice, and in some respects rather remarkable, collection of excerpts from the literature of the mountains that has been gathered in this dainty little volume.* Scarcely any aspect of mountain scenery has been overlooked, and every mood of the beholder finds some expression appropriate to itself. French, German, English, and American writers have all been laid under tribute. Most of the pieces are poetry, but there also are quite a number of well-chosen prose extracts. The grouping of the contents of the volume is partly geographical and partly thematic, as is evident from the following selection of general headings: "The Mountains," "In the Valley," "Man and the Mountains," "Cloud Pageantry," "Storm," "Hills and Fells of England," "The Alps," "Hellas and the Orient," "The West," etc. Both in size and in content the book is well adapted to become the pocket vade-mecum of a mountaineer.

W. F. B.

"IN THE HEART OF THE CANADIAN ROCKIES."

The mountaineer, especially if he be contemplating visiting the Canadian Rockies, cannot help being interested in this book.† Besides giving a very good account of the general aspect of these mountains and a description of the peaks of greatest importance, with choice photographs, there are a great many first ascents detailed here, and those one always enjoys. One feels, perhaps, on noticing the footnotes that explain many common mountaineering terms, that the book was written with a view to instructing the non-climbing public who

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[*] The Voice of the Mountains. Edited by ERNEST E. BAKER and FRANCIS E. ROSS. London: George Routledge & Sons, Ltd. New York: E. P. Dutton & Co. Pp. 294.

[†] *In the Heart of the Canadian Rockies.* By JAMES OUTRAM. New York: The Macmillan Company. 1905. Pp. 466.

have never *cached* any provisions, nor looked into the vast recesses of a *crevasse,* nor contemplated a *couloir.* This perhaps betrays the attitude of a recent convert to Alpine recreation. One of the most interesting chapters is that devoted to Lake Louise. There are some most excellent photographs of that lovely lake and descriptions of climbs made in its vicinity, which make one long for an opportunity to camp there and explore its neighborhood. The first ascents, which indeed comprise nearly the whole book, are given with a good deal of detail and convey much useful information to the would-be climber of these mountains. For this reason Mr. Outram has made a valuable contribution to alpine literature. So far as the Selkirk Range is concerned, however, his maps are superseded by those just completed by the Topographic Survey under the auspices of the Dominion Government. E. M. B.

"THE GARDEN BOOK OF CALIFORNIA."

Very delightful, as well as practical, is the *Garden Book of California,* by Belle Sumner Angier. It is an artistic little volume, illustrated with photographs of suggestive features of the most attractive California gardens. Its message is more particularly for the amateur, and it is written with especial consideration of California climatic conditions. Very valuable are the hints on irrigation, the preparation of soil for planting, the gathering and preservation of seeds, the transplanting of seedlings, and the destruction of insects. Besides these more general features of gardening, the book deals with special problems, such as rose culture, ferns and ferneries, the cultivation of native flowers and shrubs, back-yard problems, and, most alluring of all perhaps, out-of-door living-rooms. The book, published by Paul Elder and Company, and very prettily decorated by Spencer Wright, seems to fill a long-felt need of the amateur gardener. M. R.

The National Geographic Magazine for December contains a brief article by Edwin Swift Balch on "Highest Camps and Climbs." He compares the achievements of T. G. Longstaff and W. W. Graham, and concludes by saying that "to any one who will look at the facts intelligently and without prejudice, there can be no doubt that Dr. Longstaff has made the highest camp (23,000 ft.) and the second highest ascent, and that to Mr. Graham still belongs the coveted honor of the record ascent (24,015 ft.)." The reviewer has added the probable altitudes in the quotation just given. Since Mr. Longstaff reached an altitude of about 24,000 feet on Gurla Mandhata, it is apparent that he is a close rival of Mr. Graham, who established his record on Kabru. The most complete accounts of these ascents are the following: T. G. Longstaff, "Six Months' Wandering in the Himalaya," (*The Alpine Journal,* 1906, vol. XXIII, pp. 202-228); Mr. Longstaff's chapter in Sherring's book on Western Tibet, reviewed in this number of the BULLETIN; W. W. Graham, "Travel and Ascents in the Himalaya," (*The Alpine Journal,* 1884, vol. XII, pp. 25-52); Emil Boss and Douglas W. Freshfield, "Notes on the Himalaya and Himalayan Survey," (*The Alpine Journal,* 1884, vol. XII, pp. 52-60); Edwin Swift Balch, "The Highest Mountain Ascent," (*Bulletin of the American Geographical Society,* 1904, vol. XXXVI, pp. 107-109). W. F. B.

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* *The Garden Book of California.* By BELLE SUMNER ANGIER. Paul Elder and Company, San Francisco.

FORESTRY NOTES.

EDITED BY J. B. LULL.

FOREST RESERVES. *Press Bulletin* No. 142, issued by the Forest Service on December 8, 1906, gives briefly an interesting exposition of the workings of the National forest policy in the use of reserves. That the forest reserves are rapidly being changed from objects of Government charity to sources of revenue is conclusively shown by figures comparing the receipts during the fiscal year 1905-1906 as against the previous year: The total revenue brought in was $767,219.96, as against $60,142.62 for the previous year. In timber sales there were disposed of for immediate or early removal nearly 300,000,000 board feet of lumber, at stumpage prices ranging up to four dollars per thousand, as against 96,060,258 board feet, with a maximum price of two dollars and fifty cents per thousand, in 1904-1905. During the last fiscal year the area of forest reserves was increased from 85,693,422 acres to 106,999,138 acres.

It must not be inferred that this revenue has been so greatly increased at the expense of reserve property. It has resulted from the fuller utilization of forest resources. Mature timber in which deterioration offsets growth has been removed, resulting in a betterment of forest conditions because it was cut in such a way that reproduction of valuable species followed. Grazing has been sold, but under regulations which prevent harm to forage. Privileges of various kinds have combined to swell the revenue from reserves while making them yearly more valuable.

During its last session Congress enacted the wise provision that ten per cent of the gross receipts from forest reserves be made over to the States in which they are situated, for the benefit of the counties which would otherwise receive no revenue from a part of their area. California's allotment this year will be $8,192.12. This amount is exceeded only by the States of Colorado and Utah.

The saving of reserve property which resulted from the organized care of the reserve force was undoubtedly worth more than the whole cost of administering the reserves. Only about eight fires of any consequence occurred on the reserves during the calendar year 1905, a season of extreme dryness. This small number was due in large part to the system of patrol, which leads to the discovery of fires before much damage has been done.

NEW RESERVES. The Monterey and San Luis Obispo forest reserves, which were created during the past summer, will be manned at an early date. Otto Tortensen, Ranger-in-Charge of the Monterey reserve, aims to have his force at work on a trail from the Arroyo Seco River to the Coast early in January. Mr. Tortensen will maintain headquarters at Salinas. The San Luis Obispo reserve will be in charge of Supervisor E. S. Mainwaring, with headquarters at San Luis Obispo. The Monterey reserve has an area of 335,195 acres; the San Luis Obispo reserve, 363,350 acres.

FOREST SERVICE HONORED. Under the caption "American Forestry Honored Abroad," *Press Bulletin* No. 144 of the Forest Service announces that the Forest Service of the United States Government is to become a member of the International Association of Forest Experiment Stations. Other countries represented in the association are Germany, Austria, France, Italy, Russia, and Switzerland, the leading countries in the practice of scientific forestry. The purpose of the association is to standardize experimental work generally, so that the methods of investigation in each country will be uniform, and to collaborate in researches affecting two or more of the countries interested. Americans will feel proud of the rapid progress made in forestry here, which enables the Forest Service to enter this association on equal terms with the European countries through whose researches, conducted for many years, a science of forestry has been built up.

STATE AND FEDERAL CO-OPERATION. By an Act of the Legislature, approved March 16, 1903, the State of California made an appropriation of $7,500 each year for two successive years, to be used in forestry work in co-operation with the Forest Service, the Service to contribute an equal sum. In the language of the act, the appropriation was made for the purpose of "studying the forest resources of the State and their proper conservation, and especially with a view of establishing a proper State forest policy." This contract has been renewed twice since the conclusion of the first two years with an additional appropriation of $5,000 by both the State and the Forest Service for each succeeding year.

This co-operative work, which will be completed by the end of the present fiscal year, has yielded, in the form of maps, reports, and practical demonstrations, invaluable data on all phases of California forestry.

One important result of this work was the passage of the act of March 18, 1905, which created a State Board of Forestry and the office of State Forester. As enacted, this law lacked much of the machinery included in the original bill to enforce its provisions, yet as an educational measure and a step in the right direction it has served a useful purpose.

All Californians having the permanent welfare of their State at heart will feel grateful to the Forest Service for its unassuming and thorough work in collecting reliable data on such a difficult question. The difficulties which beset one engaged in such work must be experienced to be properly realized. In speaking of this work recently, Governor Pardee said: "Every cent of this money was spent wisely and honestly, as I knew it would be."

REPORT OF STATE FORESTER. The first public report of State forestry work was submitted to Governor Pardee on December 8th. This report shows the intimate relation existing between the forests of California and practically every other industry, records the experiences gained under the Forestry Act, and recommends specific changes in the law to provide for its fuller enforcement. The growing field for the practice of technical forestry is alluded to with the recommendation that the fixed salaries for assistants, which is now so low that technically trained men cannot be secured, be removed, leaving this to be arranged by the State Board of Forestry. The present attempt to protect forest areas from fires by the services of volunteer fire wardens serving without pay or direction is shown ineffective. It is urged instead that the State accept an equal burden with the counties in protecting this resource of more than local importance, and employ salaried fire wardens, to be on duty during the dry season only. The report is now in press and will be available for distribution within a few days.

CALIFORNIA REDWOOD PARK. It is a matter for congratulation that the California Redwood Park has suffered no damage from fire during the past season. The danger from outside fires has been diminished greatly by the opening of fire-lines from forty to sixty feet wide on the ridges surrounding the park. These lines will soon encircle the park, as a gap about one and a half miles wide is all that remains. When this is crossed, and the lines improved somewhat by widening and further clearing, no great apprehensions will be occasioned from any but the largest fires. These lines are not supposed to be automatic, but to serve as vantage-points from which approaching fires can be fought and backfiring be done safely. They will be supplemented by a patrol during the dry season and by a telephone system connecting them with the warden's headquarters for use in summoning aid, etc.

A substantial improvement of much value and convenience has been added recently by the construction of a private telephone line from Boulder Creek to Governor's Camp in the center of the park. A new log barn and a structure for housing employees and tools have been erected during the past year.

A survey of the park boundaries is now under way. All brush and small trees are being removed from a path four feet wide, and guide stakes are being set where trails and roads cross the boundary. When completed this survey will establish the park boundaries and permit the exclusion by fencing and otherwise of straying stock, hunters, etc.

During the coming spring a substantial lodge for the warden will be built at the park entrance on a tract of land donated to the State for this purpose by Mr. H. L. Middleton. A water system for Governor's Camp and the warden's lodge, together with a road-sprinkling apparatus, are soon to be provided.

REVISED BY-LAWS OF THE SIERRA CLUB.

(ADOPTED APRIL 29, 1905.)

INCORPORATED JUNE 4, 1892.

ARTICLE I.—*Name.*

The name of this corporation shall be the SIERRA CLUB.

ARTICLE II.—*Purposes.*

The purposes for which this corporation is formed are as follows, to wit: To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains; to take, acquire, purchase, hold, sell and convey real and personal property, and to mortgage or pledge the same for the purpose of securing any indebtedness which the corporation may incur, and to make and enter into any and all obligations, contracts, and agreements concerning or relating to the business or affairs of the corporation, or the management of its property.

ARTICLE III.—*Place of Business.*

The place where the principal business of said corporation is to be transacted is the City and County of San Francisco, State of California.

(The foregoing articles, forming a part of the Articles of Incorporation, can be changed only by amending such articles as provided by law.)

ARTICLE IV.—*Directors and Officers.*

SECTION 1. The government of the Club shall be intrusted to nine of its members, to be known as the Board of Directors, who shall elect from their number a President, Vice-President, Secretary, and Treasurer.

SEC. 2. The Directors shall enter upon their term of office on the first Saturday in May following their election, and shall thereupon elect the officers specified, who shall be the officers of the Club as well as of the Board, and such Directors and Officers shall hold office for one year and until their successors are elected and have qualified.

Sec. 3. The Board of Directors shall be the managing board of the Club, elect new members to the Club, control all expenditures and property of the Club, fill vacancies in the Board and its officers, and act for its interests in any way not inconsistent with these by-laws; but shall have no power to subject the Club to any liability beyond the amount of the corporate funds.

Article V.—*President.*

The President shall preside at all meetings of the Club and of the Board of Directors; enforce the by-laws; call such meetings as he is empowered to call; nominate all Standing Committees, of each of which he shall be *ex officio* a member, said nominations to be presented to the Board of Directors for confirmation at the commencement of his term of office; exercise general supervision over the affairs of the Club; have such other powers as ordinarily accompany such office; and at the end of his term of office present a report of the work accomplished by the Club during the preceding year, and outline a policy for the future, such report to be published in the Sierra Club Bulletin.

Article VI.—*Vice-President.*

During the absence or disability of the President the Vice-President shall act in his place; and in case both President and Vice-President are absent from any meeting, the Secretary shall call the meeting to order, and an acting President be elected by the meeting.

Article VII.—*Secretary.*

The Secretary shall keep an exact record of the proceedings of the Club and of the Board of Directors; have charge of the records of the Club; give notice to the members or the Directors, as the case may be, of meetings of the Club and of the Board; shall receive and receipt for the dues and other moneys belonging to the Club, and deposit the same, in the name of the Club, with the bank or banks designated by the Board of Directors; submit names of persons recommended for membership in the Club to the Board of Directors for election; submit to the members, to be voted on, such questions as may be certified to him by the Board of Directors for that purpose; issue from time to time to the members circular letters, informing them of the work and condition of the Club; and, at the end of his term of office, shall present to the Board of Directors a report giving the history of the Club during the previous year, such report when approved by the Board, to be published in the Sierra Club Bulletin.

ARTICLE VIII.—*Treasurer.*

The Treasurer shall, under the general supervision of the Board of Directors, disburse all moneys belonging to the Club, excepting such as are in the Permanent Fund, of which the accrued interest only shall be at his disposal for Club use; keep proper books of account; and at the end of his term of office, and at such other times as may be required, submit to the Board of Directors a report of the expenditures and the financial condition of the Club, and his annual report, when approved by the Board, shall be published in the SIERRA CLUB BULLETIN.

ARTICLE IX.—*Honorary Officers.*

SECTION 1. The Board of Directors may, at their discretion, elect annually, by a unanimous vote, an Honorary President, who must be a member of the Club, and who shall have pre-eminently distinguished himself in mountaineering, exploration, or research.

SEC. 2. The Board may also elect annually four Honorary Vice-Presidents, who must be members of the Club, and who shall be selected for such offices by reason of their prominence in matters identified with the purposes for which the Club was organized or because of some material aid and assistance they may have rendered the Club.

ARTICLE X.—*Librarian.*

A Librarian shall be elected annually by the Board of Directors. He shall be a member of the Club and have charge of the Club's library; correspond, on behalf of the Club, with other similar clubs, particularly with a view to securing exchange of publications with such clubs; have power to select, from the membership of the Club, assistants to aid him in his work; and shall also make an annual report of the condition of the library.

ARTICLE XI.—*Standing Committees.*

SECTION 1. The Standing Committees, to be nominated by the President and presented to the Board for confirmation, shall be as follows, viz.: An Auditing Committee, a Committee on Publications, an Outing Committee, a Committee on Local Walks and Excursions, and a Le Conte Memorial Lodge Committee.

SEC. 2. The Auditing Committee shall consist of three members of the Board of Directors. Its duty shall be to examine and audit all accounts of the Club at the end of each Treasurer's term of office and at such other times as the Board may direct.

SEC. 3. The Committee on Publications shall consist of nine members, the Chairman of which shall be the Editor of the

SIERRA CLUB BULLETIN. It shall select papers and articles to be published in the SIERRA CLUB BULLETIN, and shall exercise general supervision over all publications of the Club not otherwise provided for.

SEC. 4. The Outing Committee shall consist of three members, at least one of whom shall be a member of the Board of Directors. It shall have full charge of the preparation, management, and conduct of the Annual Outings of the Club and of such special Outings as the Committee may arrange for. The Chairman of this Committee shall be the manager of such Outings. All such Outings shall be conducted on an independent financial basis, and the Club funds shall not be available for such purpose.

SEC. 5. The Committee on Local Walks and Excursions shall consist of five members, whose duties shall be to arrange and conduct local walks and excursions.

SEC. 6. The Le Conte Memorial Lodge Committee shall consist of three members, at least one of whom shall be a member of the Board of Directors. It shall have charge of the Le Conte Memorial Lodge in Yosemite Valley and of all other similar properties that may be owned by the Club.

ARTICLE XII.—*Southern California Section.*

The formation of a "Southern California Section of the Sierra Club" is authorized. Only members of the Sierra Club who reside in Southern California shall be qualified to become members of the Section. The objects of this Section shall be to advance the interests of the Club in Southern California. The Section shall elect its own officers, and is authorized to take independent action in matters within the purposes of the Club, but which are of special interest to Southern California. To this end the Section is authorized to collect data and information concerning the mountains of Southern California, and to conduct local outings. Information collected by the Section and articles prepared under its direction shall be published in the SIERRA CLUB BULLETIN, if the Committee on Publications of the Sierra Club deem the matter submitted of interest to the whole Club. The Section shall be a subordinate body of the Club, and shall, as such, take no part in the management of the Club. None of the funds of the Sierra Club shall be used for the purposes of the Section, unless specially authorized by the Board of Directors. The Section shall provide and disburse its own funds. Southern California, within the meaning of this article, shall include the Counties of Santa Barbara, Ventura, Los Angeles, San Bernardino, Orange, Riverside, and San Diego.

ARTICLE XIII.—*Nomination of Directors.*

The Board of Directors shall, at least five weeks previous to the annual election, appoint from the members of the Club at large a Nominating Committee of five. It shall be their duty to nominate a ticket of at least eighteen candidates for Directors for the ensuing year; provided, however, that the name of any member proposed in writing to the Committee by any ten members of the Club shall be added to such ticket, and also provided that the name of any Director who shall have been absent from any three consecutive meetings of the Board during the preceding year without furnishing an excuse in writing which shall have been accepted by the Board as sufficient, shall not be placed on the ticket. Within two weeks after its appointment, the said Committee shall file its report with the Secreary of the Club, who shall, at least two weeks previous to the annual election, have printed and mailed to each member of the Club a ballot of such nominees. This ballot shall have the names of all nominees arranged in alphabetical order, with a blank space for the insertion of any additional name, and opposite each name a space for the marking of a cross. Upon said ballot shall be the following words:—

> "BALLOT FOR BOARD OF DIRECTORS OF SIERRA CLUB.
>
> "Annual Election, Saturday, April [Here insert date of annual election.]
>
> "Polls open from 1 to 4 P. M.
>
> "DIRECTIONS FOR VOTING.
>
> "Vote for nine candidates by marking a "cross opposite the names of the candidates "selected. Vote in person at the annual elec- "tion or mail your ballot; in which case in- "dorse your name on the envelope; otherwise "the ballot will not be counted. The election "is so conducted by the judges as to keep "each vote secret."

With such ballot the Secretary shall mail a stamped envelope, with the following address and words printed thereon:—

"BOARD OF DIRECTORS, SIERRA CLUB,
[Here insert office address.]
"SAN FRANCISCO, CAL.

"Ballot from...................."

ARTICLE XIV.—*Election of Directors.*

SECTION 1. The annual election for Directors shall be held on the last Saturday of April of each year, and the voting shall be by ballot. No notice of such election, except that given by the mailing of such ballot, shall be necessary.

SEC. 2. The polls shall be open at 1 o'clock P. M. and shall be kept open until 4 o'clock P. M. on the day of election. A plurality of votes shall elect.

SEC. 3. The Board of Directors shall appoint five Judges of Election from the members of the Club at large to supervise said election, a majority of whom shall be competent to act, and the Secretary of the Board shall refer to them unopened all the envelopes containing ballots.

SEC. 4. The Judges of Election shall, at the time of the annual election and before opening the envelopes, check off the names of those thus voting, and shall thereupon open and destroy said envelopes and, without examining the ballot, cast said ballot in a box provided therefor. At the close of the election the judges shall count and report to the President and Secretary in writing the number of votes cast for each candidate and the names of those elected to serve as Directors; and the Secretary shall thereupon notify in writing the members elected.

ARTICLE XV.—*Removal from Office.*

Any Director or other officer of the Club may be removed from office for good cause shown, by an affirmative vote of not less than three fourths of the members present at a special meeting of the Club convoked for that purpose, or by a three-fourths vote of all ballots cast at a special vote of the Club as provided for in Article XXIII.

ARTICLE XVI.—*Meetings of the Board of Directors.*

Meetings of the Board of Directors shall be held when called by the President or by three members of the Board. The Secretary shall mail to each member of the Board a written notice specifying the time and place of meeting at least two days prior thereto. A majority of the Directors shall constitute a quorum and form a Board for the transaction of business.

ARTICLE XVII.—*Meetings of the Club.*

The Club shall hold an annual meeting at such time as the Directors may decide, such meeting to be held primarily for the reading of papers or the delivering of lectures on subjects of interest to the Club, and also for the purpose of exhibiting stereopticon views of mountain scenery. Special meetings may be called by the Board of Directors, and the Board shall at the written request of at least thirty members call a special meeting of the Club. Fifty members shall constitute a quorum at any meeting, and a less number shall have the power to adjourn a meeting until a quorum shall be present. The Secretary shall give notice by mail to each member of the time, place, and object of any meeting at least one week prior thereto.

ARTICLE XVIII.—*Dues.*

SECTION 1. The first year's dues of newly elected members shall be five dollars, payable within two months after election.

SEC. 2. The annual dues of all members thereafter shall be three dollars, payable in advance on April 1st. Notice of such dues shall be sent by the Secretary to members on or near that date, and all members whose dues are unpaid on December 1st shall have notice of that fact sent to them; and if such dues are still unpaid on the first Saturday in May in the year following, they shall thereupon cease to be members, and the Secretary shall cancel their names from the membership list, but such membership may be revived by the Board of Directors in its discretion and upon such terms as it may decide. The President and Secretary are authorized to remit any dues *sub silentio,* when they deem it advisable.

SEC. 3. Any person may become a life member upon the payment of fifty dollars at any time after his election to membership, and shall thereafter be exempt from the payment of dues.

ARTICLE XIX.—*Permanent Fund.*

All moneys received for life membership and such other sums as may be received or appropriated by the Board of Directors for permanent investment shall be securely and separately invested as a Permanent Fund, the income only of which shall be expended.

ARTICLE XX.—*Membership.*

SECTION 1. Elections to membership shall be made by the Board of Directors, and the affirmative vote of at least seven members of the Board shall be necessary to election. Proposals for membership shall be made in writing by a member of the Club and presented to the Secretary, who shall thereupon mail each candidate a circular of information concerning the Club, a copy of these by-laws, and a postal card addressed to the Board to be signed by such candidate indicating that he desires to become a member, and if elected will assent to the by-laws. As soon as the Secretary shall receive at least six such postals signed by the candidates, he shall thereupon prepare a ballot containing the names of such candidates, their addresses, and the names of the members proposing them, and shall mail a copy of such ballot to each member of the Board of Directors, who shall, upon receipt of such ballot, indicate thereon the nature of his vote as to each candidate and return such ballot to the Secretary. The Secretary shall notify each newly elected member of the fact of his election, and also that his dues for the current year are payable. Upon receipt of such dues, which must be paid within two months (otherwise, the election shall be void), the Secretary shall enroll the name of such person on the regular membership list.

Sec. 2. Honorary members, not to exceed twenty-five in number, may be elected by a two-thirds vote of the entire Board, but they shall not be required to pay any dues.

Article XXI.—*Resignation of Members.*

Section 1. All resignations must be made in writing, addressed to the Board of Directors.

Sec. 2. No resignation of membership shall be accepted or shall take effect until all indebtedness to the Club shall have been paid by the resigning member.

Sec. 3. All interest in and to the property of the Club and privileges of the Club of such resigning members, or of any member ceasing to be such by dismissal or death, or from any cause, shall cease and revert to the Club.

Article XXII.—*Discipline.*

Any member may be suspendid or expelled by a vote of at least seven members of the Board of Directors, but no such vote shall be taken until after the member shall have been furnished with a statement of the charges preferred against him, and shall have been given at least one week's notice of the time when the same will be considered by the Board; and every such member shall have the right to appear before the Board, and be heard in answer to the charges, before final action thereon shall be taken.

Article XXIII.—*Ballot by the Club.*

Whenever the Board of Directors shall decide that any question submitted to it for its decision is of such importance that it should be submitted to a vote of the members of the Club, the Board shall cause to be certified to the Secretary the form in which such question shall be submitted and shall direct him to have such question printed on the regular annual ballot for Directors; or, if it should order a special vote to be taken on the question, the Secretary shall thereupon prepare a special ballot with such question printed thereon, and the mailing of such ballot and the canvass of the vote on such question shall be conducted in all other respects in the same manner as the annual election of Directors is conducted. A majority vote of all the ballots cast shall decide the question. The Board shall, upon the written request of fifty members of the Club, submit to a vote of the Club such question as they may propose.

Article XXIV.—*Construction of By-Laws.*

On all questions as to the construction or meaning of the by-laws and rules of the Club, the decision of the Board of Directors shall be final, unless rescinded by the Club at the annual meeting or at a special meeting convoked for that purpose, or by vote as provided for in the preceding article.

Article XXV.—*Amendments to By-Laws.*

These by-laws are fundamental, and shall not be altered, amended, suspended, or repealed, in whole or in part, except by a two-thirds vote of all the ballots cast at any annual or special election, which ballots shall be so printed as to enable the members voting to express their wish as to the adoption or rejection of any proposed amendment or alteration. Such proposed amendment or alteration must be printed in full, and mailed to each member with his ballot, and shall only be submitted to a vote of the Club when presented in the manner indicated in Article XXIII for presenting questions to be voted on.

CHARTER MEMBERS.

(Only the names of such charter members as were on the membership-list at the date of the adoption of the By-Laws are given below.)

Anderson, Prof. M. B.
Babcock, William
Bailey, Charles A.
Bartlett, L. de F.
Beatty, Hon. Wm. H.
Blake, E. T.
Blum, Max
Bradley, Prof. C. B.
Branner, Prof. John C.
Clark, Galen
Davidson, Prof. Geo.
Denicke, E. A.
Denman, Will
Drew, E. R.
Dyer, H. P.
Eddy, H. H.
Greene, Prof. E. L.
Gregory, Warren
Griffin, Prof. James O.
Harrison, Hon. R. C.
Henry, W. H.
Hoffman, Dr. C. von
Hopkins, Timothy
Hutchinson, James S.
Jepson, W. L.
Jordan, President D. S.
Keeler, Charles A.
Keep, Prof. Josiah
Keith, William
Kerr, Mark Brickell
Lawson, Prof. A. C.
Le Conte, Mrs. J. N.
Le Conte, Joseph N.
Lemmon, Prof. J. G.
Libby, Dorville
Loughridge, Prof. R. H.
Marx, Prof. Chas. D.
McAllister, Elliott
McLean, Rev. J. K.
Mills, D. O.
Mills, Mrs. C. T.
Molera, E. J.
Muir, John
Muir, Miss Wanda
Murdock, Charles A.
Myrick, M. H.
Olney, Warren
Olney, Warren, Jr.
Page, Charles
Palache, Charles
Perkins, Hon. Geo. C.
Powell, H. A.
Price, R. M.
Price, W. W.
Reinstein, J. B.
Richter, Dr. C. Max
Sanford, Prof. F.
Senger, Prof. J. H.
Shinn, Charles H.
Smith, N. T.
Taylor, Edward R.
Thayer, I. E.
Van Dyke, E. C.
Vecchi, Dr. Paolo de

PUBLICATIONS OF THE SIERRA CLUB

No. 36

SIERRA CLUB BULLETIN

Vol. VI No. 3

SIERRA
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JUNE, 1907

SAN FRANCISCO, CALIFORNIA

1907

Smithsonian Institution
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National Museum

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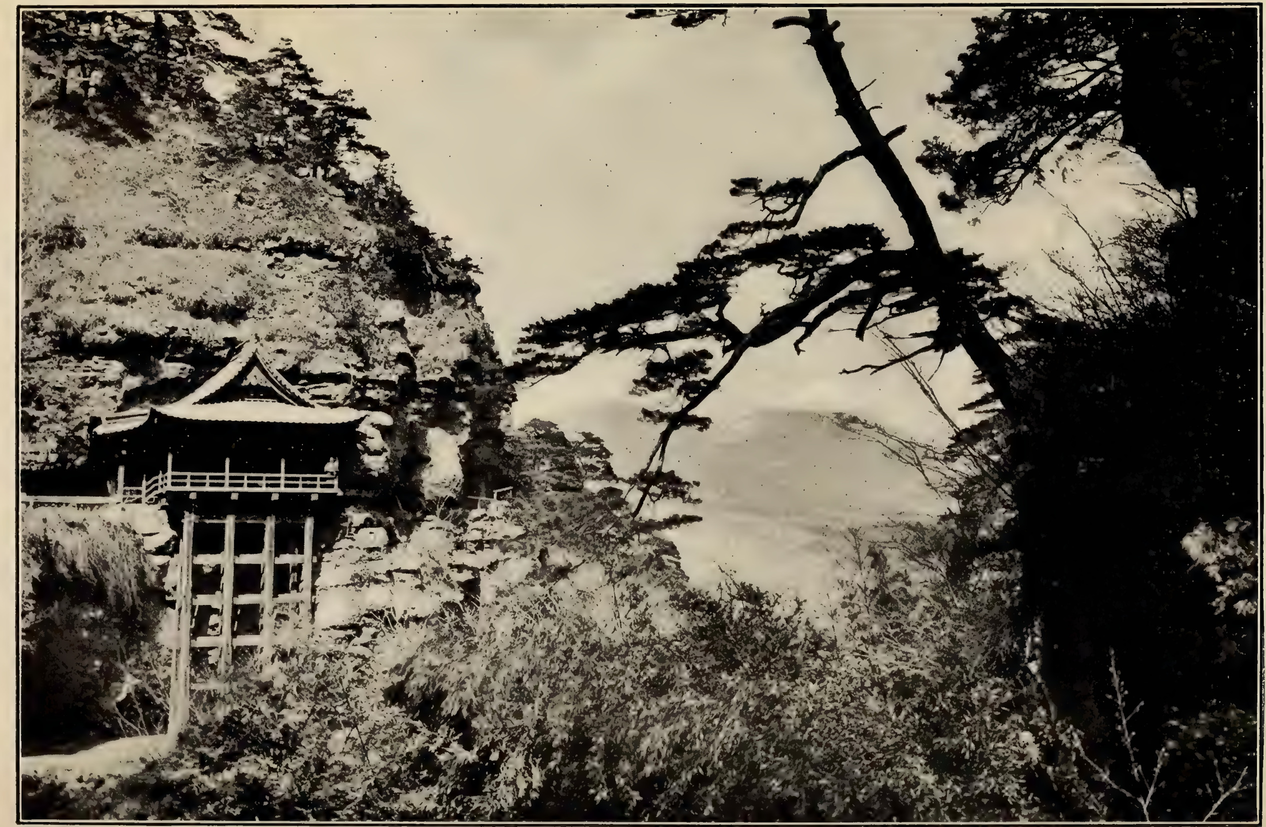
All communications intended for publication by the SIERRA CLUB, and all correspondence concerning such publication, should be addressed to the Editor, Elliott McAllister, 402 Union Trust Building, San Francisco, California.

Correspondence concerning the distribution and sale of the publications of the Club, and concerning its business generally, should be addressed to the Secretary of the Sierra Club, 2901 Channing Way, Berkeley, California.



ASAMA — SEEN FROM KOMORO.

(THE VOLCANO IS FORTY MILES DISTANT.)

(See "The Ascent of Asama-Yama," p. 186.)

From a photograph by the author.

SIERRA CLUB BULLETIN.

VOL. VI. SAN FRANCISCO, JUNE, 1907. NO. 3.

THE AFTERMATH OF A CLUB OUTING.

BY ALDEN SAMPSON.

For the suggestion that we should take a look into the Roaring River country we were indebted to one of the earliest members of this Club, after whom, in case of doubt, peaks are named in the Sierra. Five days we spent in the Giant Forest, including that of our arrival, then retraced the trail by which we had come as far as Rowell Meadow. An occasional picture remains in memory; for instance, we saw where a bear had gnawed in a dead stub at a hole dug by a woodpecker for ants, and had given it up, and we passed a thicket of chaparral near the Sherman tree, where Assistant Superintendent Fry told me that he had on two or three occasions routed out a bear. He made use of one phrase in describing this incident which is not lacking in a certain quality of vividness. He said that his dog would quite fearlessly go into the tangle in search of the bear, but when the latter charged him would come dashing out "with his tail sticking straight out under his chin." That was a vigorous rendering of the scene, and summons the picture before us. A man does not have to be a dog to feel the force of the description; one touch of nature makes the whole world kin.

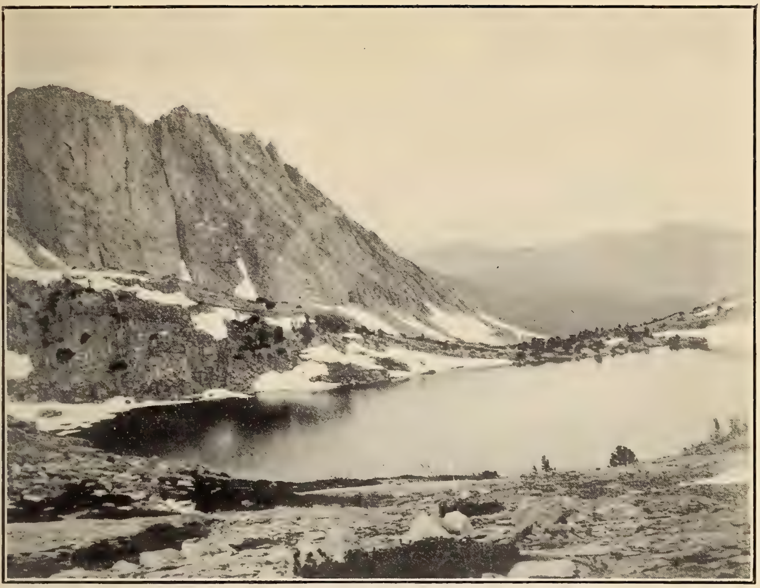
Again we stopped to enjoy the wonderful panorama at Profile View, the grandeur of snow-peaks, and of valleys intervening, where even at this distance brooded the pleasant gloom of the forest, emphasizing in the distant mellowness of atmosphere the clean-cut dignity of mountain-tops, sharply outlined against the sky. All the foreground is naked rock, the record of glacial action, often in *strata* overlapping like the layers of an onion,—a circumstance in itself, by association of ideas, far from disagreeable to the mind of the hungry mountaineer.

No trip would be complete without an occasional bother with pack-animals; we had something of this sort in the disappearance near Pattee Meadow of one of the mules with his precious burden. Two of us had stayed behind to remonstrate with the Skate, who had refused to keep up, and when we pushed on, after a brief delay, the new mule, who was ahead, had disappeared, and, not knowing his precise personal equation, we feared that he had lit out or perchance lost interest in the expedition and come to the decision that home and a life of leisure possessed greater charm than strange scenes, however fair. For half or three quarters of an hour we had the hateful sensation of "lost stock," during which time we scurried around over the face of the earth in a manner not dissimilar to that in which ants disport themselves when their domicile has been disturbed; till all at once, apparently from nowhere in particular, just as happens in a dream, there was the lost mule again in the trail, racking along at his best gait to find us, apparently as much interested in the celerity of progress as we were ourselves. Many scattered boulders were here, and perhaps he had chosen one of these with some exercise of good judgment behind which for the moment to hide. Our joy at seeing him again effaced all resentment, and every one good-humoredly swung into line.

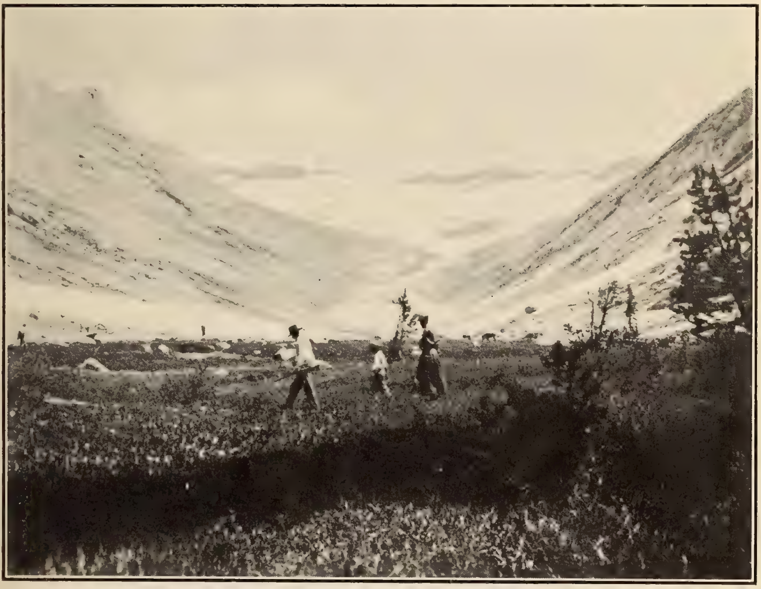
Camp was made at Rowell Meadow; once a good pasture, now infested with cattle. Feed was correspondingly short; but nothing better was in sight, so they had to go through the empty motions of filling their bellies, and we were up bright and early to get on our way and give them a more satisfying opportunity. The senior partner of our pleasant band was stirring at 4 o'clock, and had changed all of the pickets before the rest of us were awake. The distinguished-looking *vaquero,* whom we had met here before, set us on our way through the labyrinth of cattle paths to the proper saddle of the hills where lay the trail. None of us had ever been over this before; of course we had no guide, and the finding of our way was one of the charms of the trip. It would have been perfectly easy to do this save for the presence of cattle and the distracting maze of trails which they had made.

Shortly before noon, having crossed the divide into the Roaring River basin, and finding water and something bearing a remote resemblance to feed, we threw off the packs and let the stock refresh themselves for a couple of hours in the heat of the day, and then skirting Williams Meadow we followed Sugarloaf Creek down to the little dome which gives it its name. Here in the network of cattle paths we went too near the river and away from the real trail, which, we ascertained afterwards, crosses the plateau higher up and makes a cut-off by Bog Meadow to Scaffold Meadow. Near this latter it was our intention to camp, on the far side—that is, the right bank—of Roaring River, a mile or so below the junction of the two branches. We finally found ourselves pinched in on a steep, very rocky hillside, with the choice of three courses before us,—viz., of returning to the last patch of grass, which was not really sufficient for the sustenance over night of five head of stock; or of going ahead by pursuing a precarious course on the hillside overhanging the river; or, finally, of climbing away up above our present situation and attempting to intercept the lost trail, if one were there, a circumstance of which we were then in doubt. In council the last alternative prevailed, and after scrambling about we struck a well-worn trail which soon led into the Roaring River bottom. Our acquaintance at Rowell Meadow had told us that there were cattle here, but we had not realized how many there were to be of them and how completely they had given their minds to the effacement of everything fit to eat. Fortunately, at this juncture a conciliatory stockman, with his wife, his son, and partner, came to our aid, and informed us that on the other side of the river was fine feed, which he offered to show us, and the ford by which it was reached. With great friendliness he took his boy behind him and insisted that the one of our party who was afoot should ride the lad's horse across the ford; he advised us to reconstruct the pack of the short-legged Skate, so that it might be well above the reach of the water,—rather turbulent here,—and we soon found ourselves safely across at the edge of a fine meadow, full of the richest grass, where cattle were not permitted to enter,—choice grazing kept exclusively for horses and for a few milch cows. This was Scaffold Meadow—the name probably souvenir of a time when a *cache* had been constructed by hunters or sheepmen high out of the reach of coyotes. Our camp was established beneath some ponderosa pines and under the shadow of a great rock, away from the moisture of the meadow. Our supply of water was drawn from two little springs, one of them in the cavity beneath the roots of a fallen tree, where the water was cool and clear. A *crenière* was quickly constructed of a great fallen pine branch, its naked tip sprawling over the ground like some antediluvian monster, and serving as ballast, while the butt-end projected over the fire. This was supported by two rough crotches interlocked, the charm of such a combination being that it is erected without artificial fashioning, from material at hand, and without the aid of any extraneous adjuncts such as nails or thongs.

The two following days were spent in exploring the forks of the river. The first, we ascended the right-hand branch, which flows through what is properly called Deadman's Cañon, wrongly named on the sheet of the Geological Survey—a pleasant enough tramp up and back of fifteen miles. To our left as we started was a lateral moraine, one of the largest to be seen in the Sierra, its top a thousand feet or more above the river and two or three miles long. Several strong



LOOKING DOWN INTO THE ROARING RIVER VALLEY FROM NEAR THE SHEEP-HERDERS' CAMP.



DODEKATHEON MEADOW AND THE CIRQUE AT THE HEAD OF COPPER CAÑON—CATTLE OUTFIT TO THE FORE.

From photographs by the author.

avalanches had pursued their course into the valley, and in one or two instances had carried their load of ice, rocks, and trees far across the stream onto the other side, where the fallen trunks lay with their tips pointing down-hill; the reverse of what would happen if they had descended upon that side of the river. Long reaches of perfectly limpid water flowed through fragrant meadows, and a mile above Table Creek, which takes its rise only three or four miles away at the mountain of that name whose flat top is such a feature of the Sierra, we had a view of the famous Whaleback.* Long reaches of apron rocks in the bed of the stream, smoothed by glacial action, prevented the ascent of trout, and we resolved, if we had time later, to stock these upper waters with fish. There was an increased interest in the scene that I found bits of obsidian clippings, record of the former presence of Indians here; everything that emphasizes its primordial estate of untamed nature is such an added delight in the forest. Our luncheon was partaken of on a sunny bank by still waters at the edge of a grove of tamarack pines and quaking aspens.

That evening the stockmen called and invited us to go on a picnic the day following, up the other branch of Roaring River, correctly called on Le Conte's map "Copper Cañon." Mrs. Murray accompanied us, and her boy; so we were a party of five. The rather complicated ford lay a mile below us, and we were not sorry to have our friends show us again the unfolding of this in detail. The river was divided, and the section between the two streams was through cottonwoods, their bases now submerged. There was just one place where the crossing could be made with safety, and to do so it was necessary to proceed down-stream along the island in the middle of the stream. Afterwards on a memorable occasion I had the pleasure of untwisting this trail in the dark, trusting absolutely to the unerring skill of the pack-mule whom I was riding.

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* Portrayed in a former BULLETIN; Vol. I., No. 6.

The alpine willow, at an altitude between eight and nine thousand feet, was just coming into bloom, and was pleasantly fragrant, having a quality of scent similar to that of the grapevine, this perfume so exquisitely delicious as to make one cast a sort of sigh as he inhaled it. The great meadows also were a wonder of brightness and of sweet odors coming from the myriad flowers of the dodekatheon, a plant known also under other pleasant names, such as "Shooting stars" and "Ithuriel's spear." Individually, these pink and purplish flowers with their umbel of twelve blossoms on a single stem (which gives the name of the Twelve Gods) have but slight scent, but from whole fields came delicious odors, as fine and as worthy of renown as that from the absinthe fields in Switzerland, or, as we are often assured in poetry, from "fields of asphodel,"—which, by the way, though the poets seem unaware of the fact, is a plant without perfume. I have seen it often in Sicily, in Greece, and in Asia Minor, wraithlike and in mass handsome as it bows before the breeze, but without any endowment of scent whatever.

We passed the grave of a Basque sheep-herder, inclosed within a primitive fence of logs, with its French inscription on the carved headboard, beginning *"Ici repose* Jean le Basque," or whatever his name may have been; and it was the presence of this grave, I am told, which caused a visitor to this cañon, who wrote up the pass at its head in rather lurid style a year or two ago, to believe that it was "Deadman's Cañon," and, acting on that supposition, to cause the change of names on the Government map in Washington while this particular sheet was receiving its final corrections, and while the editor of the series was temporarily absent. The names are correctly given on Le Conte's map; "Copper Cañon" for this, named after an old copper mine at its source, and "Deadman's Cañon" for the other.

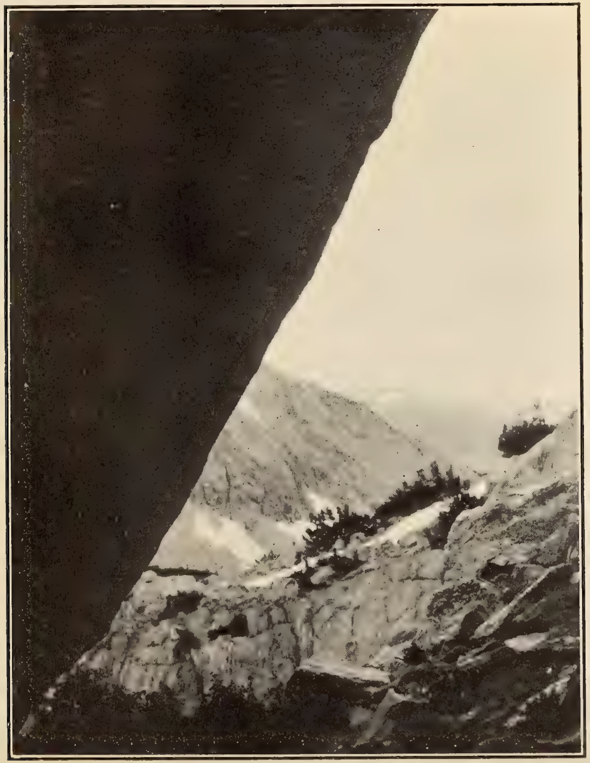
In the afternoon we climbed over the rim of the valley, ten thousand feet above the sea, which commands a view of Dollar Lake,—stupidly named, since a dollar is the least interesting of all things in the world to one in the heart of the Sierra, and with the Sierra in his heart. The lake was still full of ice. I found the fragment of the jawbone of a bighorn high up among the rocks, and the wife of the stockman told me that she had on a former occasion found at the edge of the lake the sheath of the horn of one of these animals, still well preserved, showing that quite recently they had lived here, or at least had visited these peaks. With slight pains they could be tempted back again, and when game refuges are established, mountaineers may perhaps enjoy seeing them once more. Above our luncheon place and below the copper mine was a splendid cirque, very impressive in naked granite and snow, with its meadow beneath of fragrant and gleaming cyclamen. Columbines of delicious sweetness, of the yellow kind, and a variant of the same flower merging into orange and red, thus a hybrid between the variety found above and that found below this place, grew on our way, and bushes of white spirea throve among the wreckage of avalanches which had sadly rent the forest during this past season. A half-century at least must elapse to make good the destruction caused in one season alone. In the evening of this day Blake and I agreed to go up Mt. Brewer.

The ascent of this mountain was so pleasant a climb and one so typical of similar experiences that perhaps I may be pardoned if I describe it somewhat in detail. It was half-past 2 in the morning when I lighted the candle in my folding lantern. Everything had been arranged the night before; soon the fire was lighted, the coffee was boiling, and we stepped from camp, within the hour, just at the first crack of dawn,—still too dark, save in the moonlight, to see the trail. Under the heavy shade of the trees skirting the meadow, one had to feel his way along the trail with his feet. We stole by the sleeping camp of the stockmen without awakening their dogs, and at a quarter past 5 were at the mouth of

Brewer Creek, three miles above. Another hour we toiled up over the moraine, which here records the thickness of the glacier, once twelve hundred feet in depth. Juniper grew along its rocky slopes; these love the gravel and the blazing sun. Manzanita bushes abounded, of crooked growth and with handsome mahogany-bright branches, white sage, beloved of bees, pungent mint, and brilliant painter's-brush were scattered up and down. On the lower reaches of the moraine grew a tall and strong plant, a perennial with towering shaft, the *Frasera speciosa,*—in the words of our botanist, a "surprisingly 'loud' member of a very modest and delicate family," the Gentians. The flowers of this were of greenish cream-color, and the whole raceme, with opposite-growing, handsome leaves, simple and entire, was three or four feet in height; a plant expressive of much vital power. It towered aloft like a Chinese pagoda, tier above tier of ornate architecture. Among the contorta pines we noticed where in many places the staminate flowers, while in an advanced stage of the bud, had been cut off by the chipmunks preparatory to drying and storing away for the winter, the squirrels having this trait in common with the Mexican Indians, who, Zumholtz says, gather these for food before they open. One difference must be recorded; the Indians fry theirs, while the chipmunks eat the fresh buds as one would an apple. I tasted these buds, and found them, when in just the right stage, sweet and tonic. One should not wait until the pollen is released; then they are not agreeable to the palate. What clouds of this fecundating powder blow loose when it is ripe! One often sees pools of water quite covered with the golden impalpable dust, and little windrows by the edge of a stream. A fire, doubtless set by the sheepmen for the sake of the fresh grass, had its run here not less than six or eight years ago, as one could tell approximately from observing the age of the oldest of the young pines, since all seedlings and little trees had then been destroyed. One cannot, however, place implicit reliance upon the "internodes" (the spaces between the recurring whorls of branches) as an infallible guide indicating annual growth, as he may securely do with the rings which accurately record the season's flow of sap and increase in size. These whorls of branches are very handsome, particularly in the fir trees, and I have often thought that a young fir tree cut in sections so as to preserve them uninjured would make charming decoration for the walls of a festive hall, in form resembling splendid great green snowflakes, becoming more complex from the top to the bottom of the tree as the branches are amplified in subdivision.

"Sarvis" bushes grew in the vicinity of the river, by their presence almost as much a reminder of the Indians as obsidian chippings. The berries of these bushes once afforded wholesome food over a vast area,—in the Rocky Mountains, in the Sierra and far north into Canada. In the dried state they were one of the ingredients of pemmican, the standby and chief sustenance of man in his subarctic sledge journeys; these, mixed with pounded meat and the melted tallow of buffalo, elk, or deer, constituted that famous compound which was unrivaled for concentrated energy. Then, from the service bush was procured the elastic and stubborn wood, charged with just the right sort of resilience, from which the most powerful bows were made. This was procured only after keen and intelligent search, such as an Indian alone is capable of, the despair of a white man, who, among the tangle of crooked branches, would be unable to find a pair of exactly the proper shape and thickness in a week of Sundays. The Indian bow, when completed, was often composed of two tapering pieces, bound together with deer sinew, in its two halves mainly conformed by nature to the use of man. A bush which might stand as a symbol of the undegenerate days when firearms, and the equally murderous fire-water, were unknown.

Here we got our first glimpse of Mt. Brewer, not seeming very high, as one always finds to be the case with a mountain when contemplated from its flank, where it is, of course, foreshortened and dwarfed. At an elevation just under ten thousand feet lies a little tarn, by which the former sheep camp had been established. If one desired to avoid unnecessary labor, he should camp here, leaving Roaring River at the lower end of the moraine, just above Moraine Creek, where the ascent is quite gradual. The top of the moraine is nearly level,—that is, it conforms to the course of the former glacier,—and horses could reach this camping-ground without difficulty, and would find abundant feed. Trust the canny Basque to make a good selection for his central camp! The vegetation was several weeks later than in the valley; "tamarack" pines were growing about us, instead of the Jeffrey and ponderosa pines below, also gooseberry bushes and the chinquapin, which bears its crop of minute triangular chestnuts, a favorite food of deer, grouse, and many sharp-toothed, keen-eyed little beasts. As we looked back across the basin of Sugarloaf Creek we had glimpses of Mt. Silliman and Alta Peak. Snow-patches bordered the valley bottom here. An old-established game trail, worn deep by immemorial deer, was clearly defined, and among the pines was a log torn open not so very long ago by a bear. Below this the bed of the creek was eroded, but about us we saw the first direct record of the work of the old lateral glacier, in the shape of smooth, ice-worn rock in the bed of the stream. I brought home one superb specimen of granite polished by ice, which, though only a span in length, plainly shows in outline the curve of the glacier's fall as it plunged to the valley below. Just above this rock-ferns grew in abundance; the lovely pentstemon flourished, queen of the Sierra flowers, in color a crimson rose-pink, of pure Roman dye; a red stonecrop, the *Sedum roseum,* appeared, and an abundance of bunch-grass ran up the side of the hill, not found by us below this level. The sheep of this altitude, if not literally in clover, were in feed that suited them every bit as well, the fattening



VIEW FROM THE CAVE, LOOKING DOWN BREWER CREEK—ALTA PEAK IN THE DISTANCE.

MT. BREWER FROM THE LAKE JUST ABOVE THE SHEEP-HERDERS' CAMP ON BREWER CREEK.

From photographs by the author.

mountain grass, nourished on abundant rains and dews. Soon the view of the cirque began to open up, with snow on its sides and beautiful bare granite. From the talus-piles a marmot saluted us, piercing the silence. I have heard these little beasts answer the ear-splitting whistle made with an empty cartridge-shell, and on one occasion a more than usually enterprising individual ran a long way, quite across an intervening valley, to ascertain what in the world caused such an unearthly scream. Plainly his curiosity was bigger than he was, and he arrived quite breathless and with eager eyes.

A fern-like rue, with leaves very similar to the maidenhair fern, grew here, a yellow wall-flower, pink phlox, and sheep-laurel, which the herders have to guard their flocks against, since to eat of it is fatal, and no saving instinct protects the animal; on the contrary, its taste seems to be irresistibly attractive, and the herder's duty is to mark its presence and to keep his flock at a safe distance. The ground in moist places was almost a mat of waxlike white flowers (*Hesperochiron Californicus*), the blossoms not unlike those of the old-fashioned "wax-flower," beloved of country householders and suggestive of one's youth; I have seen this flourishing mightily in a New England sitting-room when I was a boy, its flowers the pride of the countryside. It seemed as if the Milky Way had become entangled here in the grass beneath our feet, hiding by day, but faintly glimmering, as if remembering dark skies, or like a host of fireflies beaten down into the grass after a shower. At 10,300 feet we found the pink bryanthus, the first sight of which is always thrilling to a mountaineer. We were now well within the cirque, with the jagged ridge ahead of us, only a little more than two thousand feet above, which connects Mt. Brewer and the North Guard. Near a tamarack pine close at hand, marked with two stars, a double asterisk, in the manner of a Baedeker guide-book, as if to emphasize the excellence of the view, there was a pile of cyclamen leaves cut by the mountain beaver (*Aplodon-*

tia), the shyest and one of the most engaging of mammals. Here grew the willow with its fragrant flowers, male and female, yellow and gray, like fuzzy bees; the elder was in abundant flower, the lungwort, and the very fragrant yellow columbine, a superb flower. Whether the note of a cony greeted our ear we were not quite certain, but on our way back we caught a glimpse of him as he uttered his derisive cry, a bleat so absurdly like that of a lamb that the first time that I heard it, many years ago, while hunting mountain sheep in Colorado, I nearly jumped out of my skin with astonishment when this little beast uttered his cry almost beneath my feet.

A creeping kalmia only a couple of inches high was found, and Labrador tea. A certain sedge with dark purplish-brown flowers abounded, a "grass" long to be remembered, since in extremity once it furnished forth a breakfast to my need, and convinced me that if Nebuchadnezzar during the time that he derived his sustenance from this sort of food only indulged in the right kind of exercise, preferably to scale the peaks of the Kingdom of Babylon, which were all around his summer palaces, and if he were unstinted in his devotion to this sort of recreation, his peculiar food may have been chosen because he liked it and because it agreed with him. And as for being "wet with the dew of heaven,"—that is one of the most delightful things in the world; to "eat grass like oxen," and to be "wet with the dew of heaven," lie well within the capacity of any Sierran. Nebuchadnezzar has had a lot of notoriety for this, far beyond his deserts. "All flesh is grass," saith the wise man, and if he happens to be good and hungry and of sound digestion, he instinctively pursues that course by which the one is most expeditiously transformed into the other.

Just under eleven thousand feet lies a good-sized lake, now half-full of ice. Above us opened a grand view of the summit of Brewer. A little sulphur-colored plant grew on these rocks, one of the *Compositæ*. It was here that we first found one of the most lovely of the Sierra flowers, the *Primula suffrutescens,* with its tufts of clear purplish-blue flowers gleaming among compact foliage, growing often in a sheltered crevice where the sun could exert its full power, seeming in their sharp note of color to proclaim aloud the keenness which is so characteristic of this alpine air. As the name signifies, "suffrutescent," it is "somewhat woody at the base," a hardy mountaineeer, tough, handsome, and compact. It does not climb to this height for nothing; here are found all sorts of things to overcome and the fierce vitality which overcomes all things. At half-past 7, close to the last sentinels of the white-barked pines, in preparation for our second breakfast, we lighted two diminutive fires, on which, carefully supported by bits of rock, snow was melted in our round-bottomed tin cups, a ticklish operation, requiring nice adjustment of means to ends, where one learns from experience that time is saved by patient exercise of skill to prevent an upset, in which event, as one learns to his cost, the flame has to be fed with splinters and whittlings of stubborn gnarled pine, and teased to life again. We had brought Anker's bouillon capsules, the best of all similar preparations, which, dissolved in boiling water, tasted very good indeed with Bent's altogether excellent water-crackers. Soon after 8 we were climbing again, having achieved half of the height of the mountain above the floor of the valley, and perhaps two thirds of the actual distance to the summit. A rock-cress, *Arabis,* of a lavender-pink color, grew just above our camping-place. Soon after starting the rain began to fall gently, and we were so fortunate as to find a cave among the rocks large enough to crawl into, the only one encountered in the day's climb, a fortunate discovery for us, since in it we were quite protected from wind and rain, and had as well a splendid view to contemplate. Mountain rats, many generations of them, had made their home in this recess; one had built a nest of what would seem untoward material, bits of twig from a prickly gooseberry bush, about the only sort of timber here, and well covered with thorns. Such a domicile might afford shelter, but, like the Irishman's underdone pork, one would expect that he would "feel it doing him good all night long." A marmot, too, had made this his residence, burrowing well beyond possible molestation, though he would have few enemies at this altitude, but possibly if proper precaution were neglected some sort of telepathy would apprise an ever-vigilant wildcat or coyote of the fact. Nature, like Nelson's England, "expects every man to do his duty."* Though somewhat remote from the busy haunts of mice and men, this had been rather a center of mammalian activities. Generations of little creatures had made this great hall their forum. An alpine saxifrage grew close by, and the gooseberry bushes on which the mild-eyed wood-rat had made requisition. These were in flower, and had a pleasant aromatic scent, promise of fruit to come. The rain soon letting up, we started off under the ledge and twice crossed the snow, beyond this finding a handsome lavender-colored eriogonum, a representative of the buckwheat family. Here was a hoard of leaves of the lungwort and dodekatheon, all quite fresh and gathered since night.

These I fancy the mountain rat had brought in after daylight for his refreshment during the day. A little huckleberry bush throve near by, a pigmy of his race, only an inch high, with pink flowers, trying to fill the place of his more stalwart relatives. One is reminded of the remark made by Oliver Wendell Holmes, small in stature but of robust wit, when, at a committee meeting, he was asked if he would "fill the shoes" of the gigantic Phillips Brooks, who was absent. His comment in accepting the position was that he would try to do as requested, but that he could "in imagination feel the shoestrings flapping in his face!"

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* Since writing the above, Professor Lawson has told me that on a recent visit to Mexico he ascended Popocatepetl, 17,550 feet, and that he found, directly on top, in the new-fallen snow, a fresh coyote's tracks, made the morning of his ascent, an interesting evidence of that animal's curiosity, enterprise, and endurance.

That we might miss no sort of vegetation suitable to this altitude, we saw in abundance that phenomenon, always of interest, known as "pink snow," under the microscope appearing as interesting little red balls, primitive and husky representatives of the vegetable kingdom. Two little lakelets now came into view, one of them still frozen tight, the other half open. We were at twelve thousand feet elevation, well above the trees; a few stunted willow bushes still accompanied us, the buds not yet burst. Soon rocks compelled us to take to the snow again—so steep that we had to cross it quartering. A little alpine buttercup (*Ranunculus oxynotus*) grew by its bank, two or three inches high, and the eye recognized ancient glacial action on the rocks, though here we approached its upper limits. A lone gooseberry bush grew in a crevice at 12,400 feet. Above this was a granite cirque, quite bare to the eye save for a scattering buttercup or two and a little dry sedge of the preceding summer, where the disintegrated rock permitted and the ledge focused the sun. Two thirds of the way up the cirque, a fine view of mountain-peaks began to be opened. Reading them from left to right, they were Mt. King, Genevra, Thunder Mountain, Table Mountain, and Milestone,—a view very agreeable after honest toil, and, like approaching spring or other nice things in their beginning, which the imagination of each will readily suggest, perhaps as dear in retrospect as the more complete and always longed-for fulfillment. The snow, across which devastating summer winds had blown, was pitted as a human face by smallpox; elsewhere we saw it eroded into little waves, like a miniature sea congealed. A junco flew over our heads, in the main slate-colored, but noticeable for his pinkish-brown sides, and one of the sparrow clan flitted by. I fear my notes are not sufficiently definite quite to identify him. Below us on the little lake a small bird perched on an iceberg; all along the ice the hunting was fine for these creatures, insects being long preserved there in cold storage. Once, many years ago, I had taken advantage of a similar situation, when myriads of migratory grasshoppers, crossing the Rockies, had rested on the snow-fields of Ethel Peak and become congealed. In a week's time I was so fortunate as to kill three grizzlies who had come there to eat them, and I missed the opportunity of a lifetime in not staying with that snow-bank until I had killed all the bears in that part of Colorado.

A hummingbird darted overhead, the whir of his wings having a peculiarly exotic sound up here among the ice at the top of the world. It was like a glancing beam of the tropics at the north pole. The real climb began at 11,200 feet, a tableland, not above vegetation but ahead of it, winter still reigning except in very warm nooks; we found dandelion-like representatives of the *Compositæ* in flower, some of them scarcely a half-inch high. Soon we began to get a more extensive view to the northeast, through Glenn Pass into the basin of Wood's Creek, with Mt. Pinchot in the distance and Mt. King and Mt. Gardiner nearer at hand. Here grew a little yellow flower with yarrow-like foliage, two inches high, not met before, a potentilla, and another of the *Compositæ,* this one like a yellow daisy, the size of a dollar. It was just past noon when we had reached the cave. After a brief rest there we pushed on above the saddle, and were now opposite the summit of Cross Mountain, 12,140 feet, which nearly terminates the spur of the Great Western Divide, overlooking Bubb's Creek. Now we were greeted by hail, and later by rain and hail. Fortunately, this began to let up as we started to ascend the steep snow and rocks. If any part of the ascent were not perfectly agreeable, perhaps it might have been while ascending this steep snow-bank and the snow beyond, where a misstep would have meant trouble. In the Canadian Rockies or in Switzerland all work of this sort would be achieved by climbers attached to one another by ropes, not less than three people attempting it, always inclusive of one or more professional guides. Of course in our organization there are men just as expert as professionals, but there are not many of them. The Sierra Club has been most fortunate in its immunity from accident, but no steep snow or ice work is attempted without a certain risk unless people are roped together and climbers of experience take part. A single false step or failure of nerve, for however brief a moment, without this precaution might well cost a man his life. The trouble is that in the Sierra there is so little dangerous snow that one will not take the trouble to prepare the proper precautions or to use them when occasion arises. He is not tempted to do so, as he naturally would be where the peril is more sustained. He deliberately prefers to "take his chances," and this in a way makes Sierra work more hazardous than mountaineering of a far more arduous type where strict precautions are observed. Moreover, it not infrequently happens that individuals are tempted to undertake mountain work who could not "try out" or qualify for such in the opinion of a discriminating judge.

The fun of mountaineering, or of other seemingly perilous sports,—for instance, of bear-hunting,—is to be so sure of yourself and of your methods that a difficult task is achieved with precision by the exercise of skill and with the certainty that one can do it and come out unscathed. The problem is not to achieve the end desired by "taking chances." Pluck is a good thing, but the kind of pluck that leads one to risk his life for a trifle is pure folly. This kind of taking of risk in the pursuit of sport marks the tenderfoot; it is only the fool who with a knowledge of the danger attempts a thing of this sort so ill-equipped or so inexperienced as to imperil his life, and an ignoramus is just as bad as a fool, when you come to consider results. The game is not worth the candle, and even if it were, that is not the proper way to play it. Many attempt mountain-climbing who would not think of looking a grizzly in the face, and the sport is just as perilous as bear-hunting. In either case, the rule is, *First learn how.* The trouble is that everybody thinks he could preach a sermon or climb a mountain if only his wind held out; the art of the mountaineer he has not the patience to acquire. One is reminded of the remarks made by the gentleman of Celtic extraction when he was asked if he could play the violin. "Faith," he replied, "I don't know; *I never tried!*"

On the rocks grew five varieties of lichen,—a yellowish-green one, others of sage-color, black, orange, and brown. Now we were level with the top of North Guard, 13,304 feet. Here grew the yellow draba, one of the mustard family (*Draba alpina,* variety *algida*), the name, "chilly," significant of the cold situation in which it chooses to dwell.* Soon was lifted into view a little tarn, reflecting the light of the skies. It is astonishing how these little bodies of water add variety and interest to the view; one always thinks of an eye in seeing them, such life and expression do they give to the landscape. This was of a delicious light opaque green, characteristic of bodies of water in high, rocky mountains. One sees them to perfection in Switzerland, and of many varying tints; the color is due, I presume, to the presence of mineral, of infinitesimally disintegrated stone; the peculiar hue is found petrified in jade. Loose rocks drove us again to the snow, soon so steep as to compel us, sidling to the south, to come back to the rocks. Then up over broken boulders, most of them easy to cross, one, however, proving baffling and turning me back to follow my companion to the east side of the ridge, where we somewhat gingerly picked our way along a bank of drifted snow, keeping away from the edge, which overhung. It was not more than a hundred yards farther to the summit. Our first act there was to line up in battalions and give the Sierra yell, then we had a look at the Club cylinder and recorded our names.

The clouds were only partially lifted, and we had one of those mountain views so stimulating to the imagination, wherein one catches momentary glimpses of far-distant reaches. Avalanche Peak lay before us to the northwest, and almost to the north Mt. Gardiner, wreathed in clouds; the Kaweah group one saw plainly to the south. A little north of east lay the East Vidette, beyond that University Peak, Mt. Stanford, and south along the main range Mt. Bradley and Mt. Keith. To the southeast from us were visible Mt. Williamson, all but its top, Mt. Tyndall and Mt. Barnard in cloud, and, glancing through the mist, the edge of Mt. Whitney's well-defined plateau. We were interested in tracing the usual route by which Mt. Brewer is ascended, up from East Lake, with its somewhat hazardous final climb. The way by which we had come is much simpler, and is accompanied with less risk. The last rise of two or three hundred feet of the ascent from East Lake has a distinct element of danger for all save qualified experts, and it could hardly be claimed that of the party of forty-eight who made the ascent in 1902 every single individual would answer that description. To the northeast from us was a lakelet of pale ultramarine hue, and to the north a smaller one still. Under the South Guard to the southwest lies one much larger and very beautiful. It was a poor day for photography, but we stored away in innumerable brain-cells views of storm and mountain grandeur long to be cherished. Such aspects of nature, it is to be hoped, become absorbed into character, and mean mental stamina and endurance of purpose. At 2 o'clock we started down. A minute yellow flower grew not fifty feet below the summit, an eriogonum, its blossoms lying close in the midst of firm woody vegetation, a little tuft which altogether would fit comfortably within a half eggshell, frail, but with strong vitality, blossoming most cheerfully here, among the snow and storms, at an elevation close to fourteen thousand feet, in a climate not dissimilar to that of the Arctic Circle.

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* Or more recently named *Draba lemoni*—Watson.

On top we had climbed to the summit of the bold and picturesque boulder which dominates that scene, a feat accomplished doubtless by many previous climbers; Le Conte has told me that he stood erect on its peak for a photograph, which took good nerve.

On the summit we had found an abandoned staff of cottonwood left by some previous climber. This rendered good service when the descent of the snow-banks began. We divided it with as near mathematical precision as might be into equal sections, and it afforded each of us a brake to aid in that somewhat ticklish operation. The upper reaches of the snow were far too steep to permit of coasting; to have attempted it would have borne greater resemblance to falling off from the mountain-side than to sliding down-hill. The temptation to begin at the earliest possible moment was, however, strong; the process of laboriously picking one's way over the broken rocks in descent being excessively tedious; so just as soon as we dared, we turned ourselves loose on the snow-bank, digging in our heels to prevent too rapid progress, and retaining the proper position by the drag of the extemporized brake. The result was that we fairly flew over the not altogether even surface. The snow was somewhat melted, and hence yielding, but was full of good, honest ice crystals which cut through the strong cloth which served as our only toboggan like coarse sand-paper. For the second time this season I sacrificed a pair of trousers, or a useful portion of them, to this exhilarating sport; on Goat Mountain in the first place, and again here. The process of attrition and of transformation of that which was thick into that which was excessively thin or non-existent was in both instances brief. A stretch of the mountain which it had taken us a tedious half-hour to ascend was accomplished in half a minute, or it may be in less time. As I progressed in my rapid flight, like Donati's comet, with a tail of loose snow streaming after, I had noticed in glancing ahead that something had dropped from my companion's pocket and had bumped after him, as if in the endeavor to catch up. Flying over the snow-bank, I made a grab at the article, whatever it was, though the process was a complicated one, it being necessary to maintain an equilibrium by the use of the brake at the same time that one snatched at the article offered to his grasp only for the briefest instant. It proved to be a box of talcum powder for the feet, and this I managed to throw far ahead, where it was later recovered. He that has not coasted down a snow-bank on a mountain-peak has missed one of the genuine sensations of the Sierra. Things occur with the rapidity of thought while the actual glissade is being made. The last cobweb and vestige of somnolence leaves the mind; one is awake and alive!

On the flatter stretches, the "red snow," here of a pure salmon tint, was very noticeable, particularly in depressions, and of a more vivid color when the surface was kicked off. I found a big dragon-fly chilled on the snow, and wishing another look at him, and needing the free use of both hands and lacking any other place to carry him, I promptly clapped him into my hat, where after a time he was revived by the heat of the body and fluttered about in an aimless sort of way. Naturally, coming to in the dark and not recognizing his surroundings, after the novelty of the situation had worn off and the first gratification of warmth had somewhat subsided, he felt a certain surprise, I suppose, at finding himself beneath an unfamiliar opaque canopy and above that which to him must have seemed a sort of tangled chaparral radiating so much heat. I turned him loose with the Russian formula of farewell, "Be with God," and we went our several ways.

At the very first outpost of the albicaulis pines, and at about 4 o'clock, we stopped for luncheon. From a dead stub near by we soon gathered enough fragments of wood to afford fire for bouillon and a cup of tea. The view here was most interesting; we were just above the largest of the lakes, all ice and snow on one side and beautifully reflecting the overhanging hills. Mt. Brewer towered above in grandeur, seeming higher to the imagination than when we were ascending, in that its altitude had been measured by our footsteps; a grand panorama was visible of distant peaks, mellow in the light of afternoon.

One moral effect of our day's climb it may be is worth recording, since a similar result is, I fancy, a not unusual experience. There is nothing like an honest day's toil of this sort, and a touch of hardship shared together, even though it be slight, to bring men into close accord. Our experience is typical of many another's under similar circumstances. When we had started out in the morning we were perhaps not quite in perfect harmony, a state of equilibrium not always easy exactly to maintain when more than two people are thrown into such close relationship as necessarily exists in camp, but this day on the heights, with its pleasant difficulties overcome in common, had brought us again *en rapport.* Our second breakfast, between 7 and 8, had possessed perhaps the slightest possible trait of constraint, but on the way down how different! Here was a love-feast, nothing less, every slightest note of discord stilled, only kindness to all mankind in the heart, and the fullest serenity of spirit in which to partake of food. Truly, whatever one eats tastes good in such a frame of mind; tea becomes ambrosia of the gods, and the banquet nourishes soul and body alike, and—Heaven be praised! —long sustains the memory.

Perhaps nowhere better could this narrative be closed than in such an idyllic frame of mind, one destined to endure. Our return to camp was just after dark, where our senior partner had hot supper awaiting us, thick bean soup and cutlets,—how delightful to hungry men! He had spent the day in stocking with trout the upper reaches of water in Deadman's Cañon, and on the day following our party was broken up by his departure for home. We lingered for a time, doing a little restocking of waters ourselves, but soon retraced our steps to Horse Corral Meadow and came out by the way of Millwood.

AROUND LAKE CHABOT.

A PROTECTING ARM.

From photographs by the author.

ALONG THE FOOTHILLS TO LAKE CHABOT.

By W. Rob. Whyte.

"Far fields look green."

We travel far for adventure, which is ofttimes very tame, and forget the really interesting incidents in our daily lives. We stay at home and mope, because we have not time for a long vacation, when almost at our very doors are beauties great as those we revel in at the end of a weary journey.

Strolls among the foothills from Piedmont to Lake Chabot may give us opportunities in plenty for restoring our health and delighting our eyes, without much expenditure of either time or money. In the spring there are wild flowers along the roadsides; the little streams sparkle in the sun, and the overhanging trees, like vain maidens, seem to glory in their beauty reflected in the pools.

Then in the open the sturdy oaks throw out their gnarled and knotted arms, defying gravitation, and the smooth, rolling hills are like Mother Earth baring her bosom to the soothing rays of the glowing sun. These oaks and hills strike the mind of the stranger to Californian scenery the most forcibly. There is something so peculiarly suggestive of rugged masculinity in the one and of smoothly curving femininity in the other, that one is tempted to deem them specially typical of the race that has grown up among them. The characteristic "lighting" of these hills is beautifully shown in the paintings of Welsh.

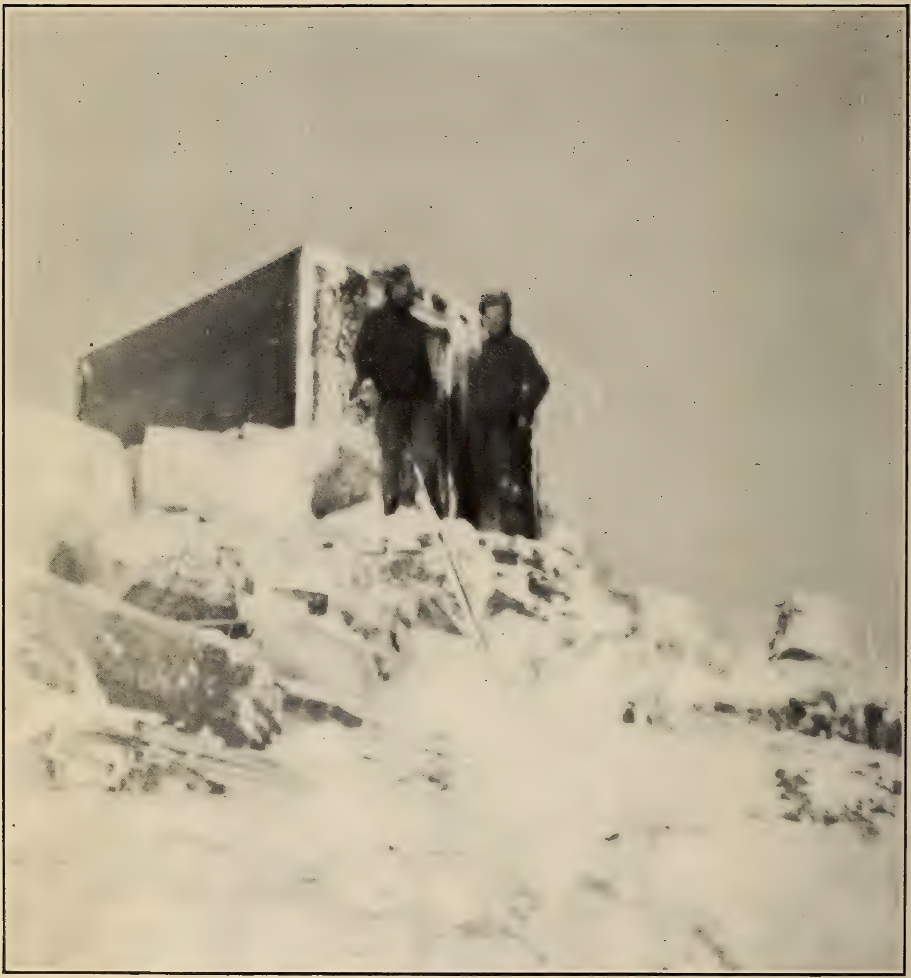
On the eastern slope of our foothills we first come upon that most delicately beautiful of Californian trees, the glorious redwood, the symmetry of whose growth must ever appeal to the artist's sense of form, whether in part, in group, or as a single tree. Each branch is graceful; the sun shining through upon many trunks makes a worthy study in light and shade; and a single tree is in itself a picture.

On a clear day let us dwell for a moment on the view looking west, with Mt. Tamalpais standing dark and stately against the sky; the estuary, like a silver thread in the deep blue of the distance; the patches of rich dark, olive-tinted blue-gums at our feet; and the bright green meadows streaked with the yellow roads. It is a scene worth climbing for, apart from the health derived from the sweet, pure air.

And then to Lake Chabot. Many an hour have I spent wandering along its beautiful banks, forgetting the worry and bustle of the city, and wondering at my solitude. A well-formed carriage road skirts the left bank, from which glimpses of the lake, at some times through and at others over the tops of the trees, form an ever-changing panorama.

If we time our return so that we leave the lake at sunset, and the heavens are kind to us—not too lavish in the matter of clouds—well, no, I will not attempt a description.

At the conclusion of our worship at the shrine of the Setting Sun, we wend our way into the shadows of the vale and take our well-earned repose.



THE OBSERVATORY ON MT. ROSE, THANKSGIVING, 1906.
(THERMOMETER SHELTER AND MONUMENT JUST VISIBLE TO THE RIGHT.)

From a photograph by the author.

MT. ROSE WEATHER OBSERVATORY, 1905–1907.

BY J. E. CHURCH, JR.

It is less than three years since Professor McAdie began to publish his articles in the SIERRA CLUB BULLETIN on mountain sites for meteorological observatories * and less than two since Professor Abbe suggested to the Sierra Club the worthy ambition of establishing on Shasta or Rainier a "lighthouse in the skies" for American meteorology.† Yet within this brief space of time, a mountain meteorological observatory of the automatic type has sprung into existence on the Pacific Coast.

The tale is a strange one, and involves the idiosyncrasies of a professor of Latin and the periodic zeal of a band of recruits won largely by the spirit of adventure. From the very beginning enthusiasm has preceded foresight and both have hastened apace.

The first comprehensive idea of such an observatory occurred to the writer near timber-line on Mt. Whitney in March, 1905, when the sight of Professor McAdie's lone thermometer-box, abandoned by Mr. Bonnett the preceding autumn, drew from him the impulsive offer to obtain the winter summit records desired, providing the observations might be conducted on Mt. Rose,‡ whose summit was 10,800 feet above sea-level and within week-end distance of the University of Nevada, where his academic activity had its center.

The ordinary volunteer observer's instruments, consisting of a maximum and a minimum thermometer and

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* Vol. V., No. 2, June, 1904, pp. 87-101: "Mt. Whitney as a Site for a Meteorological Observatory"; Vol. VI., No. 1, January, 1906, pp. 7-14: "Mt. Rainier, Mt. Shasta, and Mt. Whitney as Sites for Meteorological Observatories."

† SIERRA CLUB BULLETIN, Vol. V., No. 4, June, 1905, p. 314.

‡ For the view of the summit from the north, see BULLETIN, Vol. IV., No. 3, February, 1903, opp. p. 224.

a rain-gauge, arrived with startling promptness. A thermometer shelter was designed, strong and compact to withstand mountain gales, and with a bottom of slats to permit the easy exit of the snow. After being dismantled and properly packed, it was carried, on June 24th, like a huge sawbuck, on horseback up the trailless side of the mountain. This initial trip was fraught with adventure on the snow-fields about the summit and during the all-night retreat, but its favorable issue was welcomed as an omen of future success.

The period of maximum and minimum instruments did not long continue, for the minimum furnished readings strangely low and impelled the observers to seek more accurate knowledge of the fluctuations of the temperature.

On October 14th a thermograph and a barograph were installed, capable of recording every fluctuation of temperature and air-pressure during a period of eight days, and of indicating by means of a perpendicular stroke the highest and the lowest subsequent temperature and pressure. Thus the second period of the observatory's development began.

By the aid of colleagues at the university, a continuous record of these two phases of the weather was obtained for a period of six weeks during October and November, and with the aid of Professor J. R. Johnson, an enthusiast newly arrived from Kentucky, bi-weekly trips were made after New Year until the next autumn, when rheumatism forced him to retire from continuous service.

During this period the scientific results were suggestive rather than final, and have been quite fully outlined in the *Weather Review* of June, 1906.*

The most important of these observations was the discovery by comparison of the records with those at the central station in Reno, 6,268 feet below, that frost forecasts can probably be made on Mt. Rose from twenty-four to forty-eight hours in advance of the appearance of the frost on the floor of the State, providing the weather current is traveling in its normal course eastward from the coast. The data thus obtained have been accepted at McGill University, Montreal, to confirm similar observations made since 1903 simultaneously, by means of a cable, on Mt. Royal and at the McGill College Meteorological Observatory, 620 feet below.*

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* *Weather Review,* Vol. XXXIV., No. 6, pp. 255-263: "The Mt. Rose Weather Observatory."

Second only in importance to the first is the discovery and photographic recording of abundant evidence of the value of timber high up on the mountains, and especially on the lips of cañons, for holding the snow in check and preserving it in cold storage, so to speak, until late in the season.

Third, a systematic collection of data on mountain climatology† was begun preliminary to a study of plant environment by Dr. P. Beveridge Kennedy, botanist and horticulturist of the Nevada Agricultural Experiment Station, who has been making a botanical survey of the mountain with the rich reward of ten or more new species of alpine flora.‡ If the wild currant (*Ribes Churchii*) recently discovered, whose ripe fruit has been observed to withstand a temperature of 20° F. without injury, can be crossed with the domestic currant, this purely scientific phase of the work will have a distinctly practical result.

But perhaps quite as important from the point of view of obtaining summit temperatures in winter, as Professor McAdie desires, was the success of the thermometer shelter in automatically clearing itself of snow, even after the wildest blizzards. Through the slat bottom and sides the wind cuts like a sand-blast into the congealed mass within until the interior is free from snow again. At the same time a hanging bottom placed a few inches below the chamber protects the instruments from the reflection of the sun upward from the rocks and from the possible effects of nocturnal radiation. The shelter is also so small that its parts can readily be carried on the backs of mountaineers to otherwise inaccessible peaks.

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* *Monthly Weather Review* (U. S.), November, 1906, Vol. XXXIV., No. 11, pp. 505-510: "Records of the Difference of Temperature between Mt. Royal and McGill College Observatory, and a Method of Local Temperature Forecasting," by C. H. McLeod and H. T. Barnes.

† A portion of this record will appear in an early number of *Appalachia:* "Summit Temperatures in Winter in the Sierra Nevada" (with their relation to winter mountaineering), by the writer.

‡ *Muhlenbergia,* Vol. III., No. 2, February, 1907, pp. 17-32: "Botanical Features around Reno," by P. Beveridge Kennedy.

Dear to the hearts of Sierra Club members with an aching for winter mountaineering must needs be the experience of the volunteers who made the ascent during that first winter. A regular schedule was maintained irrespective of, and sometimes with disrespect to, the weather, and lurid were the tales brought back by the men who were having their initiation into the mysteries of the moods of Mt. Rose in winter. So large has the body of tradition grown that Professor Seward, of Stanford, who has made the trip in order not to be unusual, facetiously proposes to collate the material into a "First Year with Mt. Rose" before the vividness of the experiences and the vigor of the tales have dulled.

Only a fact or two can be touched upon here. An average winter trip required from a day and a half to two days and a half from Reno, while from the headquarters ranch at the eastern base of the mountain, where the ascent began, a winter day was all too short for the trip on snowshoes. Sleeping-bags and an ax, with a few provisions, were accordingly hung in an alpine pine at timber-line, and here, at 9,000 feet, from February until June, the parties spent the night on their way to the summit.

On the summit itself there was no protection of any kind except the lee of the monument, where, buffeted by gales and blizzards, bending like a brooding hen over the instruments to protect record-sheet and pen from the storm, the observers faithfully performed their task. Only twice did they fail. In April Professor Johnson and Dr. Rudolph spent the night at timber-line in a pit

DESCENT IN WINTER.
(CATCHING UP WITH THE SCHEDULE.)

CAMP-TREE AT TIMBER-LINE.
(ALTITUDE, 9,000 FEET.)

From photographs by the author.

dug in the snow to obtain protection from a gale at the temperature of —2.5° F., and fought their way to the summit. But so withering was the gale at that altitude, even at midday, that a precipitate retreat was made to avoid freezing. The faces of the climbers showed plainly the punishment received. Three days later the writer attempted to rescue the record just as the storm was passing. He made his way in an impenetrable fog to 10,000 feet, when the snow and ice crystals deposited by the storm in a state of unstable equilibrium on crust and trees were hurled by a sudden gale high into the air in a blinding blizzard. During his retreat he wandered into the wildest part of the mountain before he escaped from the skirts of the storm.

The experience of Captain Robert M. Brambila in March has been repeated but once. During an evening trip to timber-line his legs cramped just as the party was crossing a wind-swept zone, and only by superhuman effort did he force himself upward rod by rod to the sleeping-bags a mile beyond. Though one of the smallest men in the United States military service, he pluckily continued the trip the next morning to the summit. In the exposure of the preceding evening the faces of both members of the party were frostbitten, though they fortunately escaped without further accident. Though he had served in the Philippines and shared in the relief of Pekin, Captain Brambila declared that he had never been so exhausted in any campaign he had made.

But this is physical. To the spirit, as it revealed itself at midnight and at noon, at twilight and at dawn, in storm and in calm, in frost-plume and in verdure, the mountain became a wonderland so remote from the ordinary experiences of life that the traveler unconsciously deemed that he was entering another world.

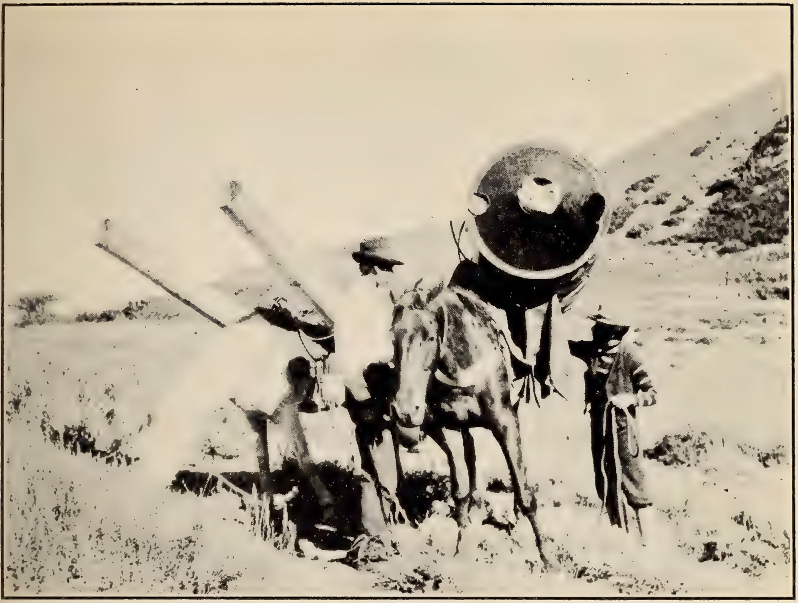
Naturally the project with its various interests made a strong appeal to all who came in touch with it. Plans for wider development grew rapidly. An observatory for the housing of observing parties and for mercurial barometer and other instruments was made possible through the generous offer of Singleton Charnock, a British ship's carpenter, and at present a student at the university, to construct the building. He had weathered Mt. Rose in one gale, but preferred the Horn twice to going through the experience again without a cabin aloft.

A thermograph and a barograph capable of furnishing a continuous record for at least five weeks were also planned in order that the value of the records might be increased with a minimum of physical exertion. An anemometer, or wind-gauge, with recording apparatus, was also planned to settle the question regarding the source of the violent pumping of the barograph during a falling or variable pressure, a marked peculiarity of every barographic record of passing storms.

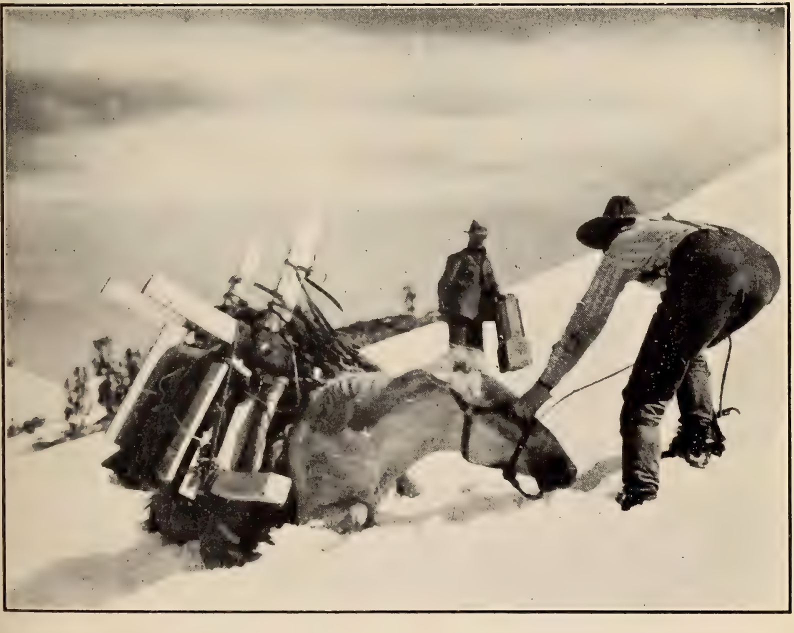
A tank capable of catching and retaining the seasonal rain- and snowfall was suggested by Professor McAdie, as was also the borrowing of a set of evaporation-tubs from the Reclamation Service to continue the evaporation observations begun on Mt. Whitney.

A request for funds was made to the Weather Bureau and to the university. At this point the passage of the Adams Act and its favorable interpretation by the Bureau of Experiment Stations prepared the way for an appropriation of five hundred dollars by the Nevada Agricultural Experiment Station on June 30, 1906, when the observatory became officially the Department of (Mountain) Meteorology and Climatology of the station. From this time the third period of the observatory's development should be dated.

Under this appropriation the observatory building was constructed during the late summer and autumn by a volunteer band consisting of Professor Johnson and Mr. Charnock, excavator and carpenter respectively; Mr. C. L. Brown, Captain Brambila, Frankie Folsom, and the writer, packers; and Mrs. Church, cook. Professors S. B. Doten and J. G. Scrugham prepared material at the home



CAPTAIN BRAMBILA'S MOUNTAIN BATTERY (THE PRECIPITATION-TANK) EN ROUTE.



TRANSPORTING THE THERMOMETER SHELTER TO THE SUMMIT — THE THIRTEENTH FALL.

From photographs by the author.

station, and others aided indirectly. No little credit is due the horses and "Socrates," the burro, who patiently endured the heavy loads of swaying lumber, though forced to plod over trailless slopes of shifting sand and rock.

The precipitation-tank was placed lengthwise on the back of old "Rowdy," the most sensible of the horses, in a cradle specially prepared for it, and by degrees reached the summit. Above timber-line a gale was encountered that blew the tank over to a horizontal position at the horse's side, where it was supported by the packer and the horse until assistance arrived. On being unlashed it escaped the grasp of its keepers and bounded wildly down the rough talus to some scrub, where it was allowed to remain for some days, until a favorable opportunity was presented of advancing it to the summit. There it now lies with fetters more secure than ever held Gulliver in the land of the Lilliputians. The sections of the long intake pipe suffered a kinder fate, and after an uneventful journey were safely anchored to the base of the thermometer shelter.

In due time, after many week-end trips and much exposure to early snows and cold, the observatory building was completed. It is eight feet square and seven feet high, and in contour and every appointment is a close imitation of a small ship's cabin. An observation-window of plate-glass affords a panorama extending from Carson City on the east to Truckee on the west, with the expanse of superb Lake Tahoe in the center. Through a smaller window in the door the eye can range from the summits of the Sierra Nevada to Mt. Davidson on the Comstock Lode, with Sierra Valley, Lassen Buttes, Reno, and Pyramid Lake (the catch-basin of Tahoe) as intervening points. At Thanksgiving and New Year parties were storm-bound in the observatory for some days in tolerable comfort, with but little fuel and a temperature outside ranging from —4° to —6° F. In fact the entire supply of fuel for the winter, outside of what has been packed by climbers, has been confined to fifty pounds of coal and one pack-horse-load of wood.

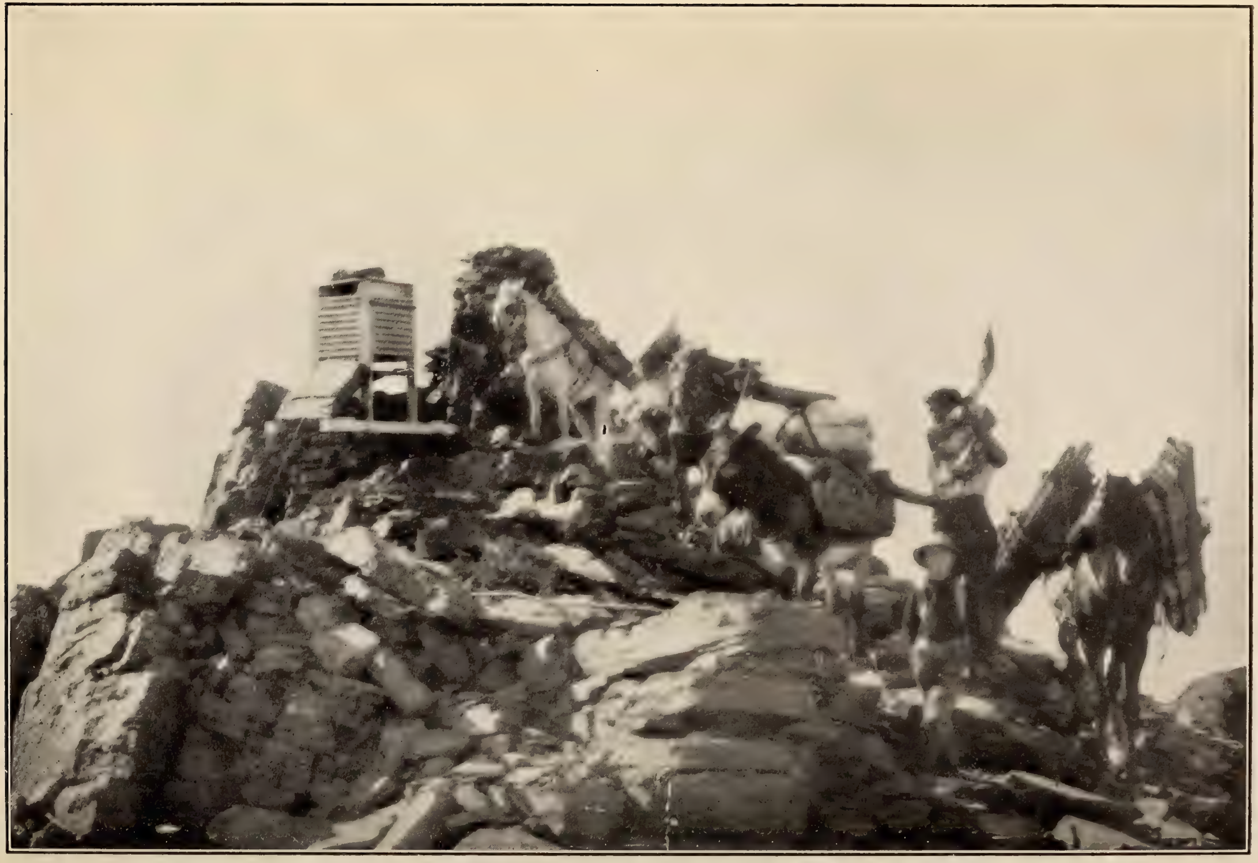
The mercurial barometer has been installed, and a portion of the ten-foot shaft designed to guard the precipitation-tank against freezing has been excavated. The bitterness of the winter weather has, however, delayed the completion of the task until the present time. A wind-vane with anemometer is also awaiting erection.

Owing to delays in the completion of the thermograph and the barograph, the generous offer to Mr. S. P. Fergusson to construct a meteorograph similar in design to the one made by him for the use of Harvard University on El Misti, Peru, (19,000 feet,) will probably be accepted. This instrument will furnish, on a single sheet, parallel records of temperature, air-pressure, velocity of the wind, and humidity. In this case a new shelter must be constructed to contain it.

At Professor Abbe's suggestion, an extra tank provided with a T-shaped intake pipe may be installed to determine, not the amount of snow and rain precipitated, but the amount latent in the atmosphere. A heliograph for use in signaling, especially in case of distress, will be added to the equipment when funds permit.

When the improvements in equipment already planned have been completed, the various problems already outlined will be further investigated. New data obtained on the February trip from Mt. Rose to Lake Tahoe and thence to Truckee serve only to confirm the earlier observations on the value of the timber in conserving the snow.

Particular attention will be given to the problem of forecasting frost and storm from the summit of Mt. Rose. If a second appropriation is made, auxiliary volunteer stations, equipped with thermograph, barograph, and wind-gauge, will be established at Brockway (6,225 feet), on State Line Point, Lake Tahoe, and at the headquarters ranch (6,000 feet), on Jones's Creek, on the opposite side of the mountain. The records furnished by these two sta-



THE OBSERVATORY IN TRANSPORTATION, SEPTEMBER, 1906.

(ARRIVAL AT THE SUMMIT.)

From a photograph by the author.

tions, when compared with those of the summit station (10,800 feet) and the central station (4,532 feet) at Reno, should furnish valuable data on the approach of the weather and the falling of storms and frosts from higher altitudes. If this experiment should prove successful, similar volunteer stations will be established in the valleys to the east to determine by comparison of the individual records with those of the summit station the method of forecasting the local frost.

If means sufficed, kite observations could be made, as Mr. Fergusson has suggested, on the meteorological characteristics of the free air at the elevation of Mt. Rose, as is being done at Mt. Washington.

This third period of the observatory's development stops short, however, of rendering full service. Since the weather at higher elevations is believed to exert a strong influence on the weather at the surface of the earth, and is more uniform than the latter, the practical function of the observatory should be to furnish constant indication of weather changes at its high altitude to the central station below. To accomplish this either an observer should be stationed at the observatory with wire or wireless communication, or a cable should be extended from the instruments to dials in the central station office. When such equipment has been obtained the fourth and last period in the development of the Mt. Rose Weather Observatory will have begun.

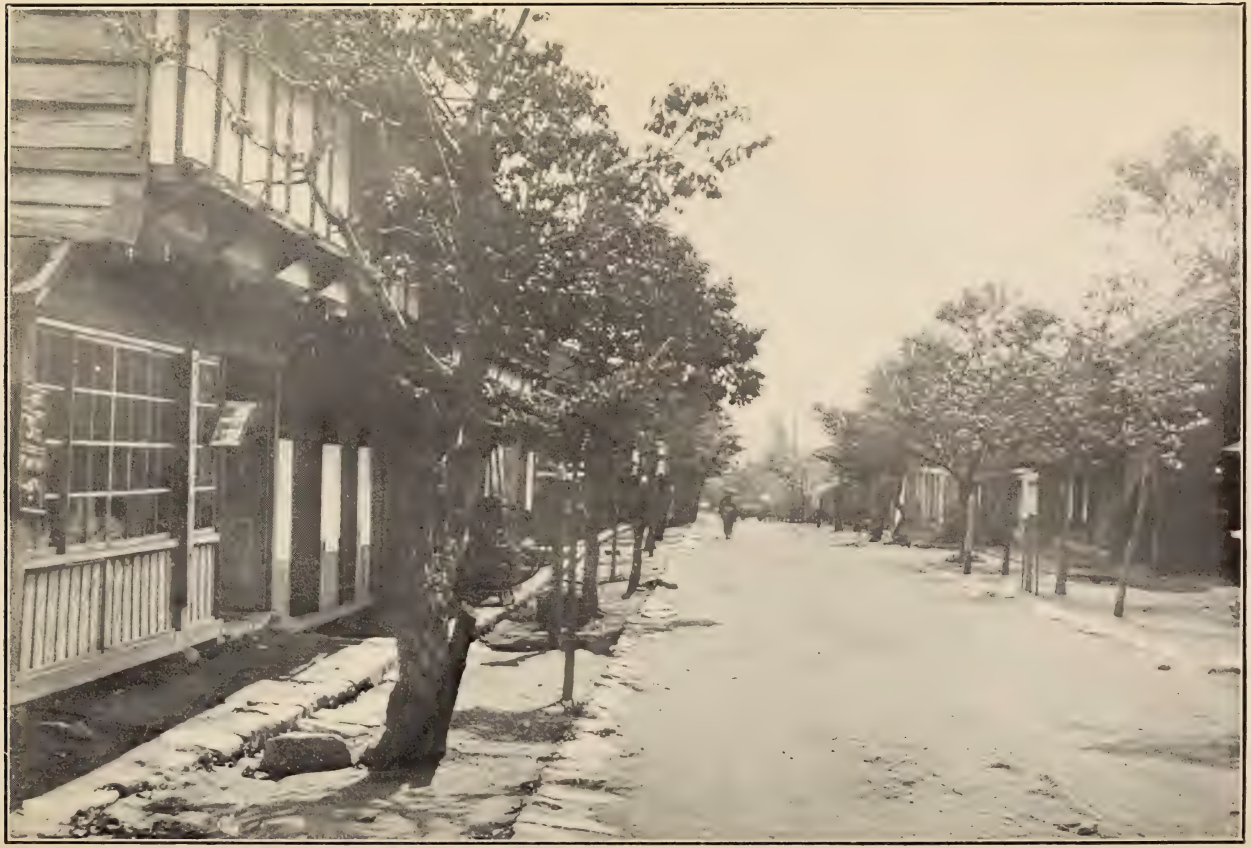
Reno, Nevada, April 24, 1907.

THE ASCENT OF ASAMA-YAMA.

By the Rev. Professor Edward A. Wicher,
Of the San Francisco Theological Seminary.

It was 7 o'clock on a perfect August evening when amid the first settling shadows we gathered in preparation for our ascent in the street of the little village of Karuizawa. Dominating the whole valley rose the mighty bulk of old Asama, 8,160 feet above the level of the sea, 4,200 feet above the level of the valley in which the village nestles. Between us and Asama was the lesser height of Hanare-Yama, the mysterious mountain of the cave of bats, which rose 1,500 feet above the village. Upon the other side of the valley beyond the fields rose the gentler elevation of Usui-toge, which from this side gave no intimation of the awful precipice just beyond our view; for upon yonder height one stands at the edge of the plateau. Behind us rose the low hill of Atago-Yama, with an ancient Shinto shrine clinging to its steep sides and a covering of long bamboo grass, in which a bear was captured only the week before. Behind Atago the hills stretched out in long green ridges, constantly increasing in height from Fuji-mi to Iriyama.

The village itself is something more than the ordinary Japanese village. Its main street is wider and straighter than such streets usually are. In the days of old Japan, when the Shogun still ruled in Tokyo, and the processions of *daimyos* passed through the country every year to pay their tribute of rice and honor unto their feudal sovereign, Karuizawa, being a chief stopping-place on the Nakasendo road, situated at the head of the pass in the mountains whence the paths run down from the great middle plain to the sea, was a thriving, busy little place filled with good old-fashioned inns and courteous



THE MAIN STREET OF KARUIZAWA.

From a photograph by the author.

hospitality. Now it has a new lease of prosperity in the advent of the foreign visitor. Englishmen in white duck suits and white helmets and Americans in summer flannels move through the streets and mingle in the scene with the naked 'rickshaw coolies and the silk-kimonoed native gentlemen.

Now our guides were bringing around our horses, fastening their American saddles upon their backs, shortening and lengthening their stirrups, and dividing up among themselves the bundles of warm clothing, boxes of provisions, and bottles of water. Prominent in the equipment of every mountain-climber of Japan are the *waraji,* or straw sandals, which are the only proper footgear for the lava-covered slopes of the highest mountains. Heavy leather boots are a burden and painful for the feet; and climbing-boots of lighter leather are soon cut to pieces upon the sharp edges of the broken lava. But the *waraji* take nothing from the free spring of the foot, and with the thick *tabi,* or short blue sock, they afford an effective protection against the sharp loose stones.

The sun had already passed in veiled splendor behind Asama when we set forth from the village. There was a considerable concourse of both Japanese and foreigners, who gathered at our starting-place to cheer our departure. The Japanese always take a kindly, curious interest in the doings of the foreigners. They want to know why they like to do such things. For instance, why should any company of sensible men, who had no business to do upon mountains and no pilgrimage to make, set out upon this hard journey? Clearly these foreigners make much labor of their pleasures. We saw the dusky faces touched with pink in the reflection of the sunset glow. We heard the head *betto* shouting his directions to his subordinates, one of whom ran beside every horse. We shouted back our answers to the jovial calls of our friends who stood in the streets and at the windows of the Mampei hotel, and passing among the kindling lights of the houses we emerged into the fields, a company of nine, who intended to reach the summit of Asama before the dawn.

For three hours our route lay in the plain around the base of Hanare to the village of Kutsukake. This little hamlet was asleep, shuttered, and dark when we arrived, but soon waked up and while our guides smoked a pipe of refreshment came out to look at us and to offer for sale bean-cake and soda-water. From this time onward we were climbing up the valley which lay between Hanare and Asama upon a slope which was gentle at the beginning but steeper with every mile traversed. We soon rounded the southern end of Hanare, thus placing it between us and the village of Karuizawa. Hanare was still upon our right as we traveled northward, while on our left was a broad, deep valley which lay between us and Asama, and which became narrower and deeper as we rode forward. At the head of the ravine was a connecting ridge across which the road passed from Hanare to Asama. Just as we entered the valley a heavy mist settled down upon us, diffusing an icy chill and making it almost impossible for one of us to see his hand before his face. The nine horses went in single file along the narrow path which wound around the side of Hanare, looking up the height of the mountain on the one hand, and on the other looking down over a precipice, which in some places fell away to the black depth of a thousand feet. There were places where a single misstep of a horse in the darkness would have thrown its rider to destruction. But just then this was hidden from our eyes; it was only upon the return journey on the morrow that we saw.

At intervals the head *betto* called in signal to the others, and they answered each in turn, the sounds, muffled in the darkness and dampness, coming as though from out of a great distance. Then after an interval a sleepy echo was stirred in the steep sides of Asama across the chasm. The paper lanterns glimmered dimly one beyond another, not localized in space, but suggestive rather of bright disembodied spirits moving across infinite tracts of gloom.

Thus we traveled until midnight, when we reached the connecting spur of Asama which runs down to Hanare. We were now at the head of the valley between the two mountains, and the main trail suddenly diverged to the left and turned directly towards the great mountain. For a few moments we saw the procession of wavering lights describe a wide semicircle and then gradually straighten itself out again. Then the line quickly became more definite, as lantern by lantern the whole company emerged from the mist and marched forward under the clear shining stars. We had climbed until we had left the clouds beneath us. All around us was the splendor of a perfect August night. Above us was the great dome, vast and of cerulean blue, ruled by the late-rising moon and guarded by innumerable hosts of stars. And now the monstrous Asama, seen thus startlingly close to us, reared its great bulk with overwhelming impressiveness. The bright light fell upon the brilliant red and yellow patches of burnt lava and made them gleam like opalescent glass. But where the cañons lay in the shadow there was deep darkness, black, threatening, and awful—a place where evil spirits might dwell, and whence there might issue wandering lights to lead astray unwary travelers—an entrance to Inferno. Our guides cried out prayers to Amaterasu, "the heaven shiner"; to Atago, "protector from fire"; and to their own Dosojin, "God of guides." Beneath us the clouds, glistening under the moon-rays, rolled in soft, silvery masses down the long valley. A gnarled pine tree, centuries old, which had in some extraordinary manner survived the repeated eruptions of destroying lava and cinders, stretched its long contorted limbs across our path and stood for a moment silhouetted against the disk of the moon. A bat, perplexed by the light of the lanterns, flew into the face of the traveler in front of me.

Then we heard two owls hooting one to the other among the trees that rose in order down the mountain-side. We heard them, but we could not see them. Then my guide began one of those interminable native songs which start on a high-pitched note, drop to a note below, and then resume on the high note in a long drawn-out quaver. The other guides joined in at intervals, and the mountains repeated the refrain over and over again.

Suddenly the horses of their own accord turned from the road and plunged into a thicket. Thinking at first that they had been frightened, we tried to head them about, but finding that they understood their own business better than we did we let them take their way. Soon we were scrambling in single file up a steep, rough path that led to the shelter of our halting-place.

On the western side of Asama and about three thousand feet below its summit is a smaller mound, some five-hundred feet in height, known by the name of Ko-Asama, which means that it is an excrescence upon Asama. Between this smaller mountain and the greater there is a pretty little valley, in which grow trees and grass. And here before climbing, in the half-light of the lanterns, amid the shadows of the moving branches, we made a fire and took our midnight meal.

After we leave the valley there is no longer any tree or shrub of any kind—nothing but the stretches of barren lava, red and yellow, sometimes rough and irregular, like the clinkers from a coal furnace, sometimes broken off and leaving sharp edges. The first five hundred feet above the valley is known to mountain-climbers in Japan by the suggestive name of "Hard Scramble." In some places the path is almost precipitous. In other places the lava is loose and dried to a fine powder, so that the climber slips backward almost as much as he advances and is choked with dust. Happily for us there had been a heavy rain only the day before, so that, stepping carefully, we found the lava much firmer to our tread than is usual.

After the conquest of "Hard Scramble" comes the long steady pull of 2,700 feet to the summit. Here the path is very even, and in two hours one can without difficulty accomplish the rest of the distance.

We reached the top just before sunrise. The first pink streaks of promise were already appearing along the eastern horizon. We seated ourselves in a sheltered place, in an opening of a cleft in the rock, on the northwest side of the crater, to watch the coming of the dawn. In spite of the fire beneath us, the air was bitterly cold. We wrapped ourselves in the heavy coats and rugs which we had brought with us. Then the miracle began. The soft flush grew deeper and spread; the gray atmosphere became amber, and then pink, and then saffron; the mountain-peaks of the whole empire were awaking to a new day of light and majesty. Northwards lay the range of Shiranesan, which infolded between two peaks the clear, deep waters of Lake Haruna. To the northwest we could see Akagisan, which held within her bosom the rich treasures of copper and all the raw material for Japan's arts of bronze. Over the shoulder of Akagisan rose the peak of Nantaisan, standing guard over the tombs of the Shoguns in Nikko. Directly before us were the rocks of Myogisan, and beyond Myogisan the ripening grain in the plain of Tokyo, and beyond the plain of Tokyo the thousand leagues of tossing water of the Pacific.

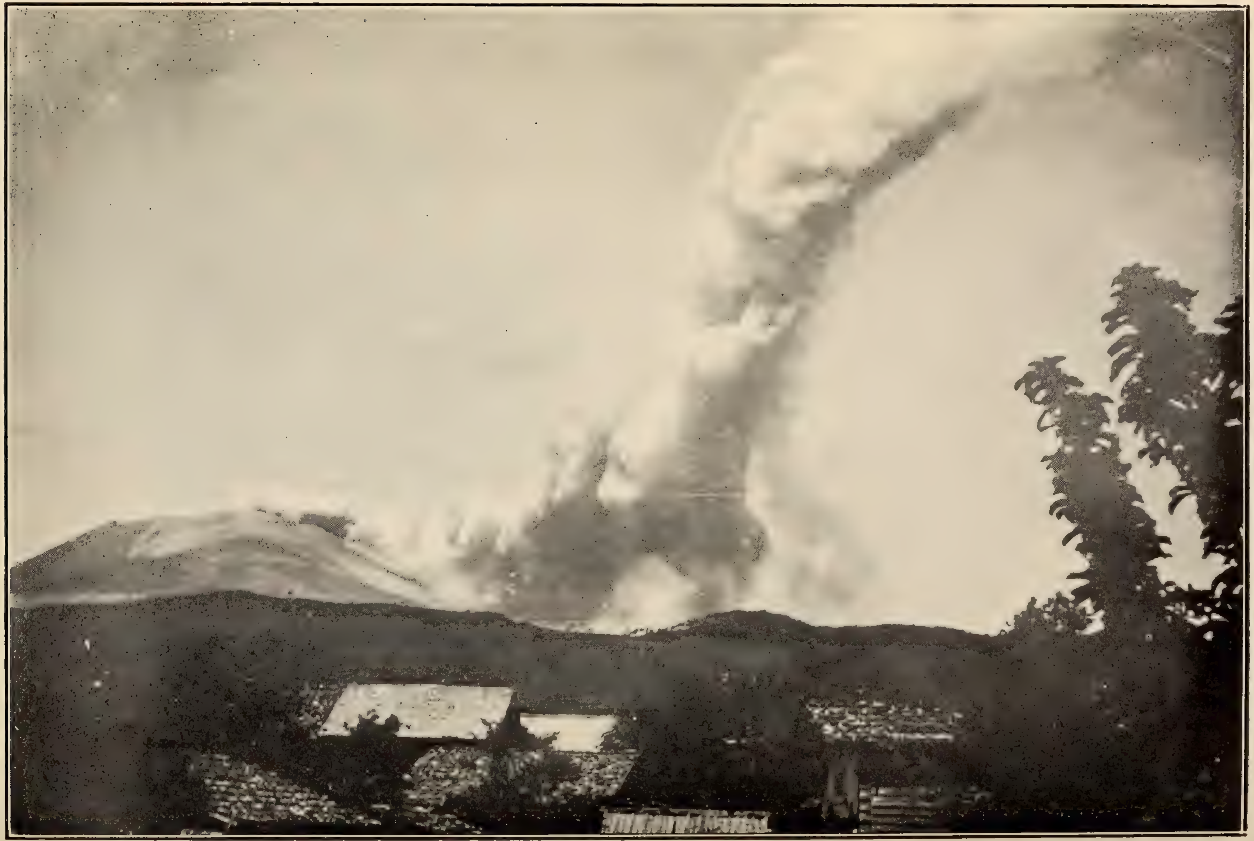
At first we could not find Fuji. But then the clouds in the south parted, and Fuji, peerless Fuji, his white head swathed in golden light and his sides enveloped in soft cloud, lifted himself to our vision above the one hundred and twenty miles of hill and plain that intervened.

No one who has not beheld the sight can imagine the beauty of clouds seen from above under the light of sunrise. They were white,—whiter than anything else in the world,—giving us our best conception of the purity of the Creator. Then the light came upon them from above, making them golden, and up through them from beneath, making them crimson. At first the light was a gentle suffused glow. Then it spread and kindled, billow upon billow, until the whole heavens were aglow. And then the great sun shot up vast rays like searchlights from beneath the horizon, rays which at length overcame and expelled the shadows and charged the clouds with all the colors of the spectrum.

With the full light of day we turned our steps backwards and upwards towards the crater itself. The circular rim is about three fourths of a mile in circumference, and of unequal height, some parts being as much as two hundred feet higher than others. It is possible in some places to approach almost to the edge and to obtain an excellent view of the interior. It is an awful scene. Out of the red and yellow walls there shoot jets of flame and steam. A heavy sulphurous smell fills the air. The bed of the crater is about three hundred feet below the rim and about thirty acres in extent. Between the rushes of smoke and steam we could catch glimpses of the bottom. Intermittent fires sprang up and subsided. At intervals there came a choking, gurgling sound, and there arose boiling water and seething ashes, which sank again as suddenly as they had risen, giving forth clouds of sulphurous smoke and steam, and then all was quiet again for a time.

There was a fascination in the horror of the place—that sort of fascination which draws men to throw themselves headlong in order to experience the full extent of the horror.

Only two weeks prior to our visit two young Japanese had committed suicide there. They were students in the department of diplomacy in the University of Tokyo, and having failed to pass the examinations which would have admitted them to appointments they were seeking, they "succumbed to the inevitable" and hurled themselves out of the world. What must have been the thoughts of these two young intellectuals as under the



ASAMA—SEEN FROM KARUIZAWA.

From a photograph by the author.

midnight stars they struggled up the height of "Hard Scramble," with no eye upon them save that of the Omnipotent, laboring to win their victory over Asama only to throw themselves as victims upon her altar! What did they think, when they were thus by themselves, face to face one with the other, separate from the rest of the world through the awful resolution which bound them together? They thought only of the dishonor which had come upon them by failure at an examination and of their purpose of cleansing away the stain by death. This is the spirit of the old Japan manifest under the forms of the new.

It is always safe to go around three sides of the crater, always a little dangerous to go along the fourth side—the side toward which the wind is blowing. But there were two of us in the party, young men, alert and athletic, who had also some scientific interests to further, who felt that the excursion would be well worth whatever danger was involved. Upon this day the southwest side was the dangerous one.

We set out with camera and field-glass, and ran for a short distance during the lull between two gusts of steam and sulphur. Then we lay flat, buried our faces in the loose lava, drew whatever air we could out of the ground, and waited until the way was clear for another dash. Between these dashes we obtained some excellent pictures and were able several times to see at close range the movements of the elements in the gulf beneath. Our friends watched us from a high point of vantage upon the other side. The whole period of time occupied by the run through the sulphurous clouds was some twenty-five minutes. When we came forth, our eyes were almost blinded for a time, and our throats and nostrils were so burned that they did not recover for two weeeks. But we would not have missed the round trip for a much greater amount of discomfort than we actually suffered.

After the encircling of the crater came breakfast, to which, in spite of the sulphur, we were ready to do most ample justice. Three of our guides had been left in the cleft of the rock to prepare the meal. It was interesting to see one of them scrape a hole in the earth and place in it our eggs and bottles of milk, which were thus warmed by the natural heat of the mountain.

The clouds rolled out vast beneath us. They were again of dazzling whiteness under the light of the sun, which was now above them and us. Occasionally, when they parted, we had fleeting views of Karuizawa and picked out our homes and the well-loved, familiar objects of the village. We felt a pity for the less happy people who were content to live in the valley and never climb.

Then for a time after breakfast we sat upon the west side of the mountain, where there were no clouds, and looked out over the weird lava beds, the valley of the village of Komoro, and the mountains of the west coast range, which reared their snow-capped peaks beyond.

One must say a word about the lava beds. They are the product of the last great eruption of Asama, which in the summer of 1783 rolled down a molten stream ten miles wide over a primeval forest and the peaceful villages of many happy farmers. After a hundred and twenty-three years the lava beds continue as in the first year, huge, shapeless masses, on which nothing grows, piles of burnt-out clinkers twenty-five feet high, full of dark chasms over which no roads are made. There is no place in the world where one will get a deeper impression of monstrous Titanic might than here.

While it is cold upon the mountain-top, it is hot in the plain beneath, and if we would not travel across that plain under the fierce heat of a midday sun, we must now make ready for return. It is quicker going down than going up; and we return easily, running, jumping, sliding, and slipping, ever downwards.

After we had left the crater some distance behind us, one of our guides suddenly called to us to look around. Old Asama, in honor of our departure, had sent forth a sudden tremendous eruption of steam and lava. It mounted upwards in one great pillar as high again as the height of the mountain and then spread out on all sides into a vast canopy which hid the heavens. It was an awe-inspiring sight. Then the ashes began to fall about us.

SIERRA CLUB BULLETIN.

PUBLISHED JANUARY AND JUNE OF EACH YEAR.

Published for Members. Annual Dues, $3.00.

The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

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REPORTS.

Report of the Secretary,

May, 1905 – May, 1907.

The names of the recently elected Board of Directors and of the officers selected by them are set forth on another page of this Bulletin.

Owing to the destruction of the official records and data of the Club on April 18, 1906, it has been impossible to present to the Club a more accurate report as to its condition in May, 1906, than has been given in the Circular Letters.

In May, 1905, the total membership was 858, and it is now 904. Of this number 93 are new members who have joined since May, 1906. The membership is now nearly what it was just prior to the fire. We lost quite a number of members through the revolutionary change of addresses which followed, and a few more resigned than would have done so under ordinary circumstances. We are now approaching the 1,000 mark, and by energetic work in securing new members we should have that number by the end of another club year.

Though the fire also interfered somewhat with the payment of dues, and, consequently, we did not receive quite as much from this source as during the preceding year, and while our printing bills for the replacing of all of the Club's circulars, by-laws, application cards, etc., which were destroyed, and certain other expenses, have been heavier than they will be another year, yet this has been more than offset by the saving of office-rent, for the headquarters of the Club have been at the home of the Secretary during the past year. We have, therefore, a larger balance on hand at the beginning of the Club's fiscal year than ever before.

We hope by January, 1908, to have secured and opened to our members and the public a suitable office and clubroom in some down-town building in San Francisco. This, together with other important advances in the Club's work will necessitate using a greater amount of money for current expenses than formerly, and this must be met by the dues derived from an increased membership. We have on hand in the Refurnishing Fund $257.58, but hope to double this amount before we will have to furnish the new rooms. We wish the equipment to be complete in every respect, and we can promise our members a much better-furnished and finer headquarters than ever before. Those who have not subscribed to this fund and are able to do so will kindly remember it.

The accessions to our new library have been noted in our circular letters from time to time, and indicate that we will start with a splendid nucleus for a mountaineering library. Since our last circular was issued the Government Survey of Canada has sent us duplicates of all its publications which are still in print.

The King's River Report which was published in our last BULLETIN will doubtless do a great deal toward attracting attention to that region, and we already have promise that certain of the recommendations made in the report as to construction of trails and bridges will be carried out in the near future by the Forest Service.

We plan to issue a similar report on Yosemite Valley and its needs in the January, 1908, BULLETIN, and endeavor to secure a large appropriation for the improvement of the valley and the surrounding national park from the next Congress. Since we will visit this region on our Outing this summer, we will be in a position to render a comprehensive and intelligent report.

This Outing promises to be a splendid success in every way. The heavy winter will make the falls especially attractive, and the High Sierra will be most picturesque with its mantle of snow.

During the fall of last year we secured, through the courtesy of Mr. Chas. F. Vogelsang and the State Board of Fish Commissioners, 5,000 rainbow trout fry, which were planted in Copper Creek of the King's River Cañon, and also 15,000 Eastern brook trout fry, which were planted in the hitherto fishless waters of Paradise Valley. The success of this commendable enterprise is due to the generosity of certain members of the Club who subscribed to a fund to cover necessary incidental expenses, and also to the generous services of Mr. Gallagher, of the King's River Stage Company, and to Mr. P. A. Kanawyer, of Millwood, who assisted in the very difficult transportation of the fry. This is work which the Club could undertake and direct to great advantage. No one thing will do more to aid in popularizing and attracting travel into our mountains than the systematic stocking of the vast number of lakes and streams in our High Sierra that are admirably adapted to fish life and yet have none whatever. In places a very little work will accomplish the desired result, and again it will take money and time to stock certain less accessible regions.

Through the generosity of Mr. Alden Sampson, our die has been replaced, and stationery stamped with it may be obtained of Paul Elder & Company, Van Ness Avenue, San Francisco. Particular mention is made of this fact, for it will help the good work of the Club if the members will use this stationery generally in their correspondence. Anything which makes the Club better and more widely known will strengthen and extend its sphere of influence. It is a pleasure and a privilege to be able to use stationery which is so artistically beautiful.

The Sierra Club is destined to become one of the greatest clubs of its kind in the world. Our mountains and world-famed scenery are near at hand, and as time goes on the work of this Club grows in importance. Let us see that we do our part to assist.

Respectfully submitted,

May 4, 1907.
WM. E. COLBY,
Secretary.
Approved by the Board of Directors.

REPORT OF THE TREASURER.

TO THE DIRECTORS OF THE SIERRA CLUB.

Gentlemen: I beg to submit the following report of the finances of the Sierra Club for the year ending May 4, 1907.

All records prior to April 18, 1906, were destroyed by the San Francisco fire of that date. The only record of our balance after April 18th was that furnished by the San Francisco National Bank, as given below. This balance was used for clearing off what bills had been contracted before the fire.

REPORT FOR 1905–1906.

GENERAL FUND.

Cash on hand April 18, 1906	$ 550 77
(From statement of San Francisco National Bank.)	
Expenditures.	
Balance on BULLETIN No. 34, C. A. Murdock & Co.	$ 257 40
Clerical work for twelve months, at $15 per month	180 00
Rent of 316 Mills Building for March and April	50 00
Stamps and stationery	37 55
Rent of telephone from January to April, 1906	4 05
Sundries, express, wires, etc.	16 00
	$ 545 00
Balance on hand May 6, 1906	5 77
	$ 550 77

REPORT FOR 1906–1907.

GENERAL FUND.

Receipts.

Cash on hand May 6, 1906	$ 5 77
Cash received from Wm. E. Colby, Secretary	2,714 75
Cash received from Addie Lathrop, Stenographer	3 00
Cash received from C. A. Murdock & Co.	20 00
Total cash received	$2,743 52

Expenditures.

Printing of BULLETIN No. 35	$ 677 60
Stamps and stationery	293 05
Clerical work for twelve months, at $15 per month	180 00
Printing of circulars and notices	120 25
Typewriting	100 75
Advertising expenses	78 75
Le Conte Memorial Lodge expenses	74 35
Distributing of BULLETINS and circulars	66 40
Transfer to Refurnishing Fund	30 00
Express on books from the East	20 35
Walk advertisements in the San Francisco *Chronicle*	5 80
Sundries, telegrams, etc.	20 95
	$1,668 25
Balance cash on hand May 4, 1907	1,075 27
	$2,743 52

PERMANENT FUND.

(From Life Memberships.)

On deposit in Security Savings Bank	$357 45

REFURNISHING FUND.

On deposit in Mechanics' Savings Bank	$257 58

Very respectfully,

JOSEPH N. LE CONTE,
Treasurer.

SAN FRANCISCO, CAL., May 20, 1907.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is at 2901 Channing Way, Berkeley, where all the maps, photographs, and other records of the Club are kept.

The Club would like to secure additional copies of those numbers of the Sierra Club Bulletin *which are noted on the back of the cover of this number as being out of print, and we hope any member having extra copies will send them to the Secretary.*

Alpine Club, London, February 8, 1907.

Secretary Sierra Club, San Francisco.

Dear Sir: It is with much sympathy and with great regret that we hear of the severe loss that your Club suffered during the disaster which last year overtook San Francisco. We have instructed our publishers to send to you those numbers of the *Alpine Journal* which are still in print,—viz. Volumes 16 to 22 and number 171. We are sorry that we are unable to supply earlier volumes, as they are quite out of print. A set of the first fifteen volumes would cost about £17. Should you wish us at any time to look out for a set for you, we should be very glad to assist you in the matter.

I remain, on behalf of the Committee of the Alpine Club,

Yours faithfully, E. H. F. Bradby,
Honorary Secretary.

Decisions of the United States Geographic Board.

The following important decisions relating to geographic names and their application were made by the United States Geographic Board on February 6, 1907. In reaching these decisions the Board has obtained the advice of many of the foremost American geographers and geologists, and the decisions here given are, in nearly all cases, the result of a consensus of opinion among the gentlemen consulted.

Cordilleras—the entire western mountain system of North America.

Rocky Mountains—the ranges of Montana, Idaho, Wyoming, Colorado, New Mexico, and western Texas.

Plateau Region—the plateaus of the Colorado River and its branches, limited on the east by the Rocky Mountains, on the west by the Wasatch Range, and extending from the southern end of the Wasatch southward, southeastward, and eastward to the eastern boundary of Arizona, following the escarpment of the Colorado Plateau, and including on the north the Green River Basin.

Basin Ranges—all those lying between the Plateau Region on the east, the Sierra Nevada and Cascade Range on the west, and the Blue Mountains of Oregon on the north, including the Wasatch and associated ranges.

Pacific Ranges—the Cascade Range, the Sierra Nevada, and the coast ranges collectively.

Sierra Nevada—limited on the north by the gap south of Lassen Peak, and on the south by Tehachapi Pass.

Cascade Range—limited on the south by the gap south of Lassen Peak and extending northward into British Columbia.

Coast Ranges—extend northward into Canada and southward into Lower California, and include all mountains west of Puget Sound and the Willamette, Sacramento, and San Joaquin valleys, and southwest of Mohave Desert.

Bitterroot Range—extends from Clarke Fork on the northwest to Monida, the crossing of the Oregon Short Line, on the southeast, including all mountain spurs.

Mission Range—range east and southeast of Flathead Lake, Montana.

Wasatch Range—includes on the north the Bear River Range, extending to the head of Bear River at Soda Springs, Idaho, and on the south extends to the mouth of San Pete River, near Gunnison.

San Juan Mountains—include all the mountains of southwest Colorado south of Gunnison River, west of San Luis Valley, and east of the Rio Grande Southern Railroad.

Sacramento Mountains—include those groups known as Jicarilla, Sierra Blanca, Sacramento, and Guadalupe.

Salmon River Mountains—include the group in central Idaho lying south of main Salmon River, west of Lemhi River, north of Snake River, and east of the valley of Weiser River.

Blue Mountains—include all the mountains of northeastern Oregon with the exception of the Wallowa Mountains, and extend into Washington.

Sangre de Cristo Range—extends from Penoha Pass, Colorado, to the neighborhood of Santa Fe, New Mexico, thus including the southern portion locally known as the Culebra Range.

Front Range—includes on the north the Laramie Range as far as the crossing of the North Platte, and on the south includes the Pikes Peak group.

Appalachian System—includes all the eastern mountains of the United States from Alabama to northern Maine.

Blue Ridge—includes the ridge extending from a few miles north of Harper's Ferry to northern Georgia.

Appalachian Plateau—includes the entire plateau forming the western member of the Appalachian System, known in the north as the Allegheny Plateau and in the south as the Cumberland Plateau.

Ozark Plateau—the plateau in northwestern Arkansas and southern Missouri.

Ouachita Mountains—the ridges of western Arkansas, south of the Arkansas River, Indian Territory, and Oklahoma.

The following extracts from the Report of Department of Highways, published in December, 1906, relative to the King's River Cañon Road, will be of interest to the members; the first extract is from the letter of the State Highway Commissioner and the Deputy County Surveyor of Fresno, describing the preliminary investigation, and the second is the report of work already undertaken:—

"It will be found that the beginning should be at the end of a wagon-road built through the General Grant National Park to the northeast gate, a short distance from the summit of the divide which must be crossed, then ascending this ridge and crossing it, whence the line should descend the drainage basin of the Ten-Mile Creek to a point near the end of a road now terminating on Ten-Mile Creek. This distance must be covered in a manner that will permit of a good grade, and therefore its particular line would be left to the work of survey. From this point it would run down the right bank of Ten-Mile Creek on the most advantageous ground, gradually descending to the South Fork of the King's River just below the lower one of the three limestone points named Windy Cliff by the Geological Survey; thence up the South Fork to a point nearly opposite Grizzly Creek, where the river is to be crossed and the line continued on comparatively flat ground as far as may be required.

"By this route, the road will contain no adverse grades from the first ridge east of the park to the river. The drop in elevation from this ridge to the previously mentioned point on Ten-Mile Creek is 2,200 feet, requiring 6.6 miles of road at six per cent to make the descent. From the Ten-Mile Point to the South Fork of the King's River the difference in elevation is

1,700 feet, requiring, with flattened grade at some rough points, six miles of road to bring the line within one mile of Boulder Creek. Thence up the river along the talus earth and rock of the south side on the grade of the stream, which is one hundred feet per mile, about eight miles to the open valley, or beginning of the floor.

"Allowing for curvature, the road should be about seven miles from the park ridge to the Ten-Mile Creek; with the additional mile from park to the top of divide, making eight miles to the point where the McKay survey diverts. From here to the river proper is another seven miles, and along the river to the open valley eight miles. In all, the total distance from the park-line to the west end of the floor of the valley proper is twenty-three or twenty-four miles.

"This route best complies with the conditions named above as prime requisites for the location. Not only will it give an excellent grade from the park to the cañon, but it will form a central line from which roads or trails may be built to points of interest. The Tehipite Cañon may be readily reached by trail. The big trees in the small cañons to the south will be of easy access, and the great rocks and cliffs of the cañon along the road-line will be no small item of interest. In fact, such a road will open a part of the Sierra Nevada Mountains of exceeding and unusual beauty. To within about five miles of the river on this route the line would run through timber, after which brush will be encountered until the river is reached, when along the river brush and timber intermingle."

"As all preliminary business incident to the beginning of work had been completed, a surveying party was placed in the field, the first camp being pitched at Huckleberry Meadow near the General Grant National Park. The park being one of the statutory termini of the route, work was commenced July 4, 1906, at the northeast park gate in extension of a good park road. . . . Camp was changed once to Ten-Mile Creek, and the survey in that time extended from the northeast gate of the General Grant National Park, on a very easy rising grade, to the summit of the divide near the head of Indian Basin. At this point, about two miles from the starting-point, the divide was crossed in a sag and the survey continued along the north slope of a ridge extending toward Ten-Mile Creek until by a gradual descent Ten-Mile Creek was crossed at nine and one-quarter miles. A very large proportion of the route is over earth, with perhaps in the foregoing distance one and one-half miles of solid rock or boulders, which does not present any difficulties of construction. After crossing Ten-Mile Creek the line was run around by and crossed Tornado Creek, whence it continued toward the cañon of the South Fork of the King's River. Upon my arrival in camp, September 7, 1906, two miles of survey had been made beyond Ten-Mile Crossing, thus making an excessive walk for the help. Consequently, the following Sunday, September 9, 1906, camp was removed to Redwood Creek, and I assumed personal charge of the work. We continued the work with the crew reduced by four men, to the ridge known as Horseshoe Bend, where, at the distance of twenty and one-quarter miles, near Windy Cliffs, work was suspended, on account of the long distance from camp, until next year. In the country traversed perhaps the most difficult of construction is between Lockwood Creek and Redwood Creek, where considerable solid and loose rock could not be avoided. After crossing Redwood Creek, however, the ground was good, so that the line was switched back for two complete turns to get down to the river, and on to the Horseshoe Bend ridge. The route selected under the provisions of the statute will clearly make the finest scenic road in the whole State. The purpose of the road was to open up the great King's River Cañon, and by the line now partly surveyed there will be no greater pleasure road."

BOOK REVIEWS.

EDITED BY WILLIAM FREDERIC BADÈ.

"MOUNTAIN WILD FLOWERS OF AMERICA." A decade or more ago there appeared a popular guide to the wild flowers of the Eastern States by Mrs. Starr Dana which enjoyed great popularity. Mary Elizabeth Parsons provided a similar work for Californians under the title "Wild Flowers of California." Now Julia W. Henshaw, following the same plan, presents us with a book* on the wild flowers of the American mountains. It is a book of more than ordinary interest to members of the Sierra Club. Not only the botanically inclined mountain-climber, but also the occasional sojourner among the mountains, will find here impulse and means to fill his hours with enjoyment. Like her predecessors in this type of "Who's Who" in the flower world, the author adopts the color scheme of arrangement for her material. Only two chapters, "Flowering Shrubs" and "Miscellaneous," are an exception to this. A notable and highly commendable feature of the book consists in one hundred and one beautiful full-page half-tone reproductions of photographs taken by the author. The descriptions are not technical in the botanical sense, and yet convey accurate information. Both the botanical species name and an English name are given for each plant. With the aids provided, it ought not to be difficult to identify most of the wild flowers that catch the wayfarer's eye among our northern mountains. Were the reviewer inclined to be critical in discussing so excellent a piece of work, he would have to confess to a wish for a less inclusive title. A cursory glance at the species described makes it apparent that it is primarily adapted for use among the mountains of Canada and the northern United States. Fortunately this does not operate greatly to the disadvantage of Californians, partly because mountain wild flowers exhibit a strong community resemblance in widely separated regions, and partly because the species not found in the California mountains are in most cases replaced by closely related species. We feel sure, therefore, that this book will make many friends as a guide to the beautiful blossoms of the high places. The imprint of the Athenæum Press of Ginn & Company is a sufficient guarantee for the typographical excellence of the book. The half-tones are remarkably clear and beautiful.

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* *Mountain Wild Flowers of America.* By JULIA W. HENSHAW. Ginn & Company, Publishers, Boston, Mass. Pp. 384. 101 illustrations. $2.00 net.

The *Journal* of the Royal Geographical Society of London (for February, 1907) gives the address delivered before the Society by the Duke of the Abruzzi. It is the Duke's account of his ascent of the peaks of the Ruwenzori Range in Africa. Thus is finally solved the riddle of the Nile. Ptolemy located these mountains on his map, but later geographers grew skeptical about their existence and wiped them from their maps. In 1889 Sir Henry Stanley climbed one of the northwestern spurs to the height of 10,677 feet, and gave to the range the name Ruwenzori —i. e. "Rainmaker." The mystery that has hung over these mountains so long is probably in part due to the fact that they are so seldom seen, even by those dwelling in their vicinity, because they are perpetually wrapped in clouds. The natives are said never to ascend above six or seven thousand feet. The Duke of the Abruzzi, who has many first ascents to his credit, took with him some of the guides and scientists who accompanied him on previous mountain-climbing expeditions. The impedimenta of the party, packed in fifty-pound cases, were transported through many miles of wilderness on the heads of native porters. Each case of provisions contained food for twelve persons for one day, soldered in tin with a light wood covering. The entire expedition, when it reached the foot of the highest mountain, numbered about four hundred natives and ten Europeans. The actual ascent of the highest peak was made on the 16th of June, 1906, by the Duke and three guides. The twin crests of the mountain were named Margharita and Alexandra, in honor of the queens of Italy and of England. There are six peaks in the Ruwenzori Range, connected by saddles having an altitude ranging from 13,800 to 14,400 feet. The following are the altitudes determined for the peaks, together with the names given to them: Margharita Peak, 16,810 feet; Alexandra Peak, 16,744 feet; Mt. Speke, 16,080 feet; Mt. Baker, 15,988 feet; Mt. Emin, 15,807 feet; Mt. Gessi, 15,647 feet; and Mt. Thomson, 15,273 feet. These names have been approved, and will doubtless remain, except the last, which the President of the Royal Society took the liberty of changing to Mt. Luigi di Savoia, in honor of the Duke of the Abruzzi, who first ascended and mapped the range.

FORESTRY NOTES.

EDITED BY G. B. LULL.

FORESTRY WORK IN CALIFORNIA. M. Smith, Jr., Cornell, '04, who has been in the employ of the Federal Forest Service during the past three years, has resigned to accept an appointment as Assistant State Forester of California. Mr. Smith assumed his new duties on May 1st. Mr. Smith secured his technical training at Cornell University. The position was made vacant by the resignation of Raymond Tyler, who resumed work for the Forest Service after a furlough of one year.

State Forestry work in California is showing increased activity with the opening of the dry season. The State Forester is busily engaged in securing the financial co-operation of county boards of supervisors in an attempt to prevent and extinguish forest fires. Last year eleven counties, mainly in the southern part of the State, appropriated sums for this purpose ranging from $250 to $1,500 per county. Although the fire season is only just opening, two new counties in the northern part of the State, which has always been considered as a region indifferent to forestry, have been secured. These are Lake and Mendocino, which have appropriated $500 each. It is hoped that before the close of the present dry season many more counties in the northern part of the State will be won over.

Associations of stockmen and irrigationists which have always been interested in preventing forest fires are exhibiting unusual interest this spring. The State Forester is co-operating with many powerful organizations of this kind, all of which are paying the salaries and expenses of the patrolmen who have been appointed fire wardens. Several lumber companies are also showing gratifying interest.

The planting season in California has ended. During the past winter the State Forester has co-operated with the Union Lumber Company, Fort Bragg, which is one of the largest owners of redwood timber on the coast, in furnishing a planting plan for the interplanting of eucalyptus with redwood sprouts on land cut over by this company. The redwood sprouts are of varying ages, but in most cases stand too far apart to produce merchantable trees. The object of interplanting with eucalyptus is to force these sprouts into rapid height growth by the lateral shading of the more rapid-growing eucalyptus.

Co-operation with the Central Counties Land Company, which owns over 35,000 acres of land on Clear Lake in Lake County, has resulted in the construction of a lath-house 40 by 128 feet in area for the propagation of eucalyptus and ornamental species, which will be used for commercial and ornamental planting on the holdings of this company. The land of the company extends in a narrow strip around the borders of the lake, including a frontage of seventy-four miles, and includes also blocks of varying area located in the valleys four or five miles back from the lake shore. The object of planting is to ornament the holdings near the lake, which will be sold for residence purposes, and to establish commercial plantations on the holdings remote from the lake, where colonies of settlers will be placed. Actual planting will be commenced next winter with the seedlings grown in the lath-house now under construction at Lakeport.

Assistant State Forester C. H. Sellers is in charge of the construction of the lath-house and the establishment of the nursery.

Two important bills relative to State forestry were introduced in the last legislature. One provided for the assembling of all provisions relating to punishment for setting forest fires; for the more certain conviction of those arrested, and for the more equal distribution of the fines collected. This bill became a law. Under its provisions the dry season, which was formerly defined as "the period between May 15th and the first soaking rains of autumn or winter," was changed to read "a dry season." In the past some trouble has been experienced in that defending attorneys have sought to prove that "a dry season" did not actually exist at the time when fires were started, because in some cases a little sprinkle has occurred between that time and the previous May 15th. The fines, which formerly varied from $50 to $1,000, were changed to $25 as a minimum and $500 as a maximum. This change will result in the conviction of a larger percentage of those who violate the forest laws, inasmuch as it will eliminate the objection of many magistrates to the imposing of a fine greater than the value of the property destroyed. It will also place the jurisdiction of cases before the justices, while formerly the maximum fine, being over $500, placed the jurisdiction in the superior courts and made too long, expensive trials, which were objected to by the counties, which formerly received no portion of the fines. The disposal of fines has also been changed. Formerly the State received the entire sum, but under the new law the county in which a conviction is secured divides the net fine equally with the State.

The other bill related to the administration and personnel of the State Forestry Department. This bill passed the Assembly without opposition, but was amended in the Senate in such form that it threw a greater burden on the State than on the several counties. On this account it was vetoed by the Governor. The opposition to this bill in the Senate was led by Senator Weed, a former lumberman, and at present chairman of the Board of Supervisors of Siskiyou County, who objected principally to the section giving power to the State Forester to compel lumber companies to clear up dangerous slashings, and to compel county officials to clear the brush from their rights of way. By the loss of this bill the department was forced to forego some improvements that were contemplated, but as the old law containing the provisions objected to still stands, the power to compel lumber companies to take care of their cut-over land and counties to clear their rights of way is retained.

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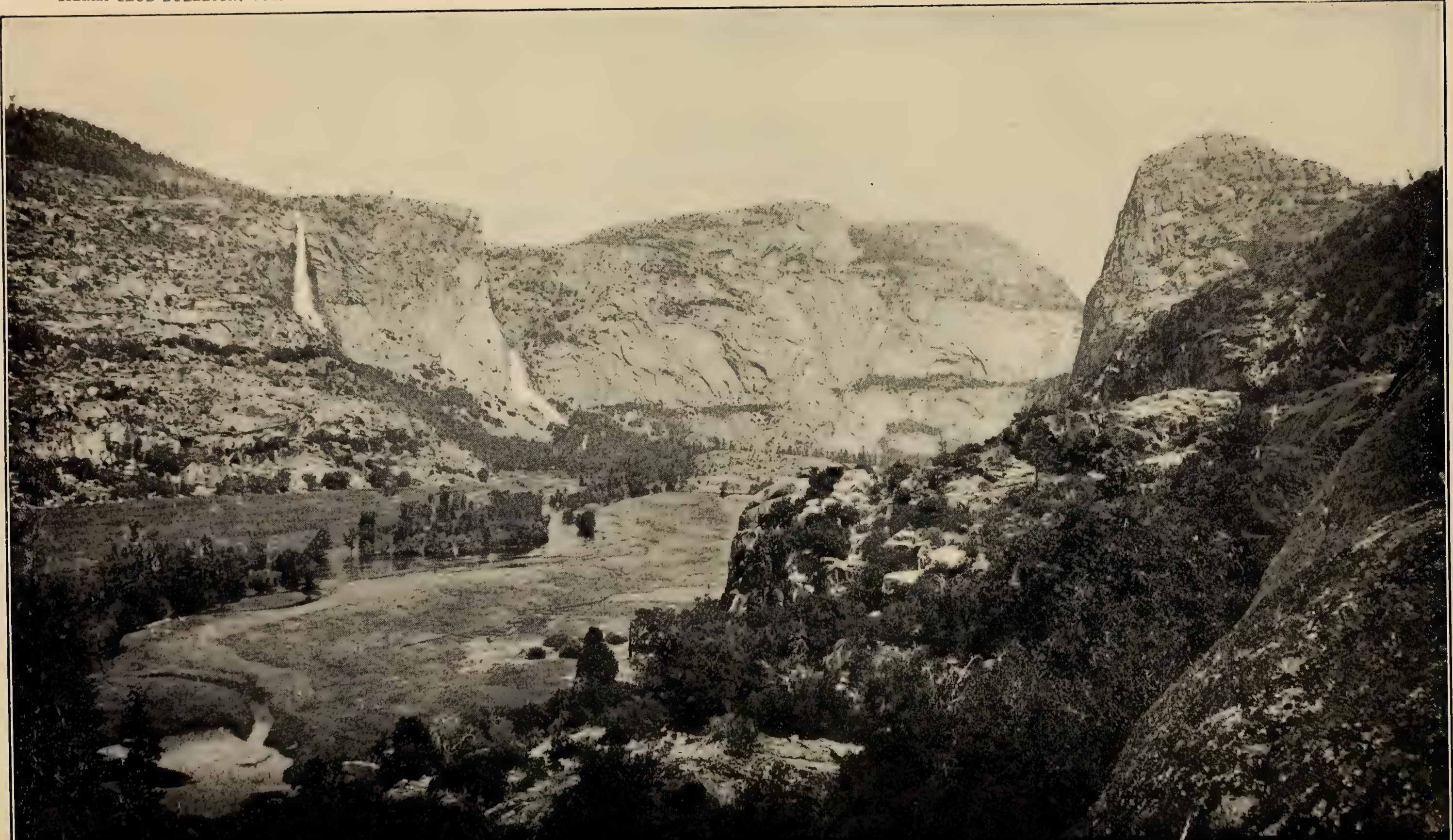
All communications intended for publication by the SIERRA CLUB, and all correspondence concerning such publication, should be addressed to the Editor, Elliott McAllister, Room 302 Mills Building, San Francisco, California.

Correspondence concerning the distribution and sale of the publications of the Club, and concerning its business generally, should be addressed to the Secretary of the Sierra Club, Room 302 Mills Building, San Francisco, California.



B 553 Looking up Hetch-Hetchy Valley from Surprise Point.

Taber Photo., San Francisco.

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THE HETCH-HETCHY VALLEY

By John Muir.

It is impossible to overestimate the value of wild mountains and mountain temples as places for people to grow in, recreation grounds for soul and body. They are the greatest of our natural resources, God's best gifts, but none, however high and holy, is beyond reach of the spoiler. In these ravaging money-mad days monopolizing San Francisco capitalists are now doing their best to destroy the Yosemite Park, the most wonderful of all our great mountain national parks. Beginning on the Tuolumne side, they are trying with a lot of sinful ingenuity to get the Government's permission to dam and destroy the Hetch-Hetchy Valley for a reservoir, simply that comparatively private gain may be made out of universal public loss, while of course the Sierra Club is doing all it can to save the valley. The Honorable Secretary of the Interior has not yet announced his decision in the case, but in all that has come and gone nothing discouraging is yet in sight on our side of the fight.

As long as the busy public in general knew little or nothing about the Hetch-Hetchy Valley, the few cunning drivers of the damming scheme, working in darkness like moles in a low-lying meadow, seemed confident of success; but when light was turned on and the truth became manifest that next to Yosemite, Hetch-Hetchy is the most wonderful and most important feature of the great park, that damming it would destroy it, render it inaccessible, and block the way through the wonderful Tuolumne Cañon to the grand central campground in the upper Tuolumne Valley, thousands from near and

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far came to our help,—mountaineers, nature-lovers, naturalists. Most of our thousand club members wrote to the President or Secretary protesting against the destructive reservoir scheme while other sources of city water as pure or purer than the Hetch-Hetchy were available; so also did the Oregon and Washington mountaineering clubs and the Appalachian of Boston and public-spirited citizens everywhere. And the President, recognizing the need of beauty as well as bread and water in the life of the nation, far from favoring the destruction of any of our country's natural wonder parks and temples, is trying amid a host of other cares to save them all. Within a very short time he has saved the petrified forests of Arizona and the Grand Cañon, and in our own State the jagged peaks of San Benito county known as "The Pinnacles," making them national monuments or parks to be preserved for the people forever. None, therefore, need doubt that everything possible will be done to save Hetch-Hetchy.

After my first visit, in the autumn of 1871, I have always called it the Tuolumne Yosemite, for it is a wonderfully exact counterpart of the great Yosemite, not only in its crystal river and sublime rocks and waterfalls, but in the gardens, groves, and meadows of its flowery parklike floor. The floor of Yosemite is about 4,000 feet above the sea, the Hetch-Hetchy floor about 3,700; the walls of both are of gray granite, rise abruptly out of the flowery grass and groves, are sculptured in the same style, and in both every rock is a glacial monument.

Standing boldly out from the south wall is a strikingly picturesque rock called "Kolana" by the Indians, the outermost of a group 2,300 feet high corresponding with the Cathedral Rocks of Yosemite both in relative position and form. On the opposite side of the valley facing Kolana there is a counterpart of the El Capitan of Yosemite rising sheer and plain to a height of 1,800 feet, and over its massive brow flows a stream which makes the most graceful fall I have ever seen. From the edge of the cliff it is perfectly free in the air for a thousand feet, then breaks up into a ragged sheet of cascades among the boulders of an earthquake talus. It is in all its glory in June, when the snow is melting fast, but fades and vanishes toward the end of summer. The only fall I know with which it may fairly be compared is the Yosemite Bridal Veil; but it excels even that favorite fall both in height and fineness of fairy airy beauty and behavior. Lowlanders are apt to suppose that mountain streams in their wild career over cliffs lose control of themselves and tumble in a noisy chaos of mist and spray. On the contrary, on no part of their travels are they more harmonious and self-controlled. Imagine yourself in Hetch-Hetchy on a sunny day in June, standing waist-deep in grass and flowers (as I have oftentimes stood), while the great pines sway dreamily with scarce perceptible motion. Looking northward across the valley you see a plain gray granite cliff rising abruptly out of the gardens and groves to a height of 1,800 feet, and in front of it Tueeulala's silvery scarf burning with irised sun-fire in every fiber. In the first white outburst of the stream at the head of the fall there is abundance of visible energy, but it is speedily hushed and concealed in divine repose; and its tranquil progress to the base of the cliff is like that of downy feathers in a still room. Now observe the fineness and marvelous distinctness of the various sun-illumined fabrics into which the water is woven: they sift and float from form to form down the face of that grand gray rock in so leisurely and unconfused a manner that you can examine their texture, and patterns, and tones of color as you would a piece of embroidery held in the hand. Near the head of the fall you see groups of booming comet-like masses, their solid white heads separate, their tails like combed silk interlacing among delicate shadows, ever forming and dissolving, worn out by friction in their rush through the air. Most of these vanish a few hundred feet below the summit, changing to the varied forms of cloudlike drapery. Near the bottom the width of the fall has increased from about twenty-five to a hundred feet. Here it is composed of yet finer tissues, and is still without a trace of disorder—air, water, and sunlight woven into stuff that spirits might wear.

So fine a fall might well seem sufficient to glorify any valley; but here as in Yosemite Nature seems in no wise moderate, for a short distance to the eastward of Tueeulala booms and thunders the great Hetch-Hetchy fall, Wapama, so near that you have both of them in full view from the same standpoint. It is the counterpart of the Yosemite Fall, but has a much greater volume of water, is about 1,700 feet in height, and appears to be nearly vertical though considerably inclined, and is dashed into huge outbounding bosses of foam on the projecting shelves and knobs of its jagged gorge. No two falls could be more unlike—Tueeulala out in the open sunshine descending like thistledown; Wapama in a jagged shadowy gorge roaring and thundering, pounding its way with the weight and energy of an avalanche. Besides this glorious pair there is a broad massive fall on the main river a short distance above the head of the valley. Its position is something like that of the Vernal in Yosemite, and its roar as it plunges into a surging trout-pool may be heard a long way, though it is only about twenty feet high. There is also a chain of magnificent cascades at the head of the valley on a stream that comes in from the northeast, mostly silvery plumes, like the one between the Vernal and Nevada falls of Yosemite, half-sliding, half-leaping on bare glacier-polished granite, covered with crisp clashing spray into which the sunbeams pour with glorious effect. And besides all these a few small streams come over the walls here and there, leaping from ledge to ledge with birdlike song and watering many a hidden cliff-garden and fernery, but they are too unshowy to be noticed in so grand a place.

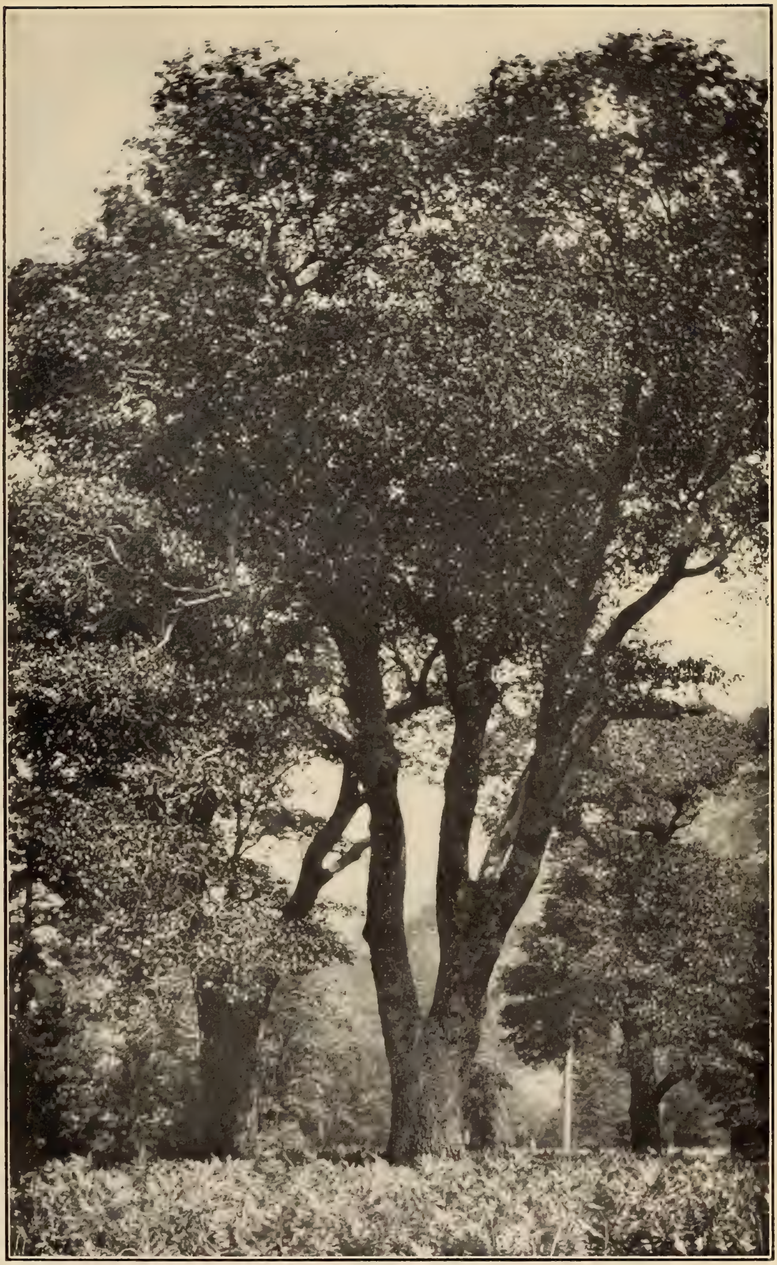
The correspondence between the Hetch-Hetchy walls in their trends, sculpture, physical structure, and general arrangement of the main rock-masses has excited the wondering admiration of every observer. We have seen that the El Capitan and Cathedral Rocks occupy the same relative positions in both valleys, so also do their Yosemite Points and North Domes. Again that part of Yosemite Fall has two horizontal benches timbered with the Yosemite north wall immediately to the east of the gold-cup oak at about 500 and 1,500 feet above the floor. Two benches similarly situated and timbered occur on the same relative portion of the Hetch-Hetchy north wall, to the east of Wapama Fall, and on no other. The Yosemite is bounded at the head by the great Half Dome. Hetch-Hetchy is bounded in the same way, though its head rock is far less wonderful and sublime in form.

The floor of the valley is about three and a half miles long and from a fourth to half a mile wide. The lower portion is mostly a level meadow about a mile long with the trees restricted to the sides, and partially separated from the upper forested portion by a low bar of glacier-polished granite, across which the river breaks in rapids.

The principal trees are the yellow and sugar pines, Sabine pine, incense cedar, Douglas spruce, silver fir, the California and gold-cup oaks, Balm of Gilead poplar, Nuttall's flowering dogwood, alder, maple, laurel, tumion, etc. The most abundant and influential are the great yellow pines, the tallest over 200 feet in height, and the oaks with massive rugged trunks four to six or seven feet in diameter, and broad arching heads, assembled in magnificent groves. The shrubs forming conspicuous flowery clumps and tangles are manzanita, azalea, spiræa, brier-rose, ceanothus, calycanthus, philadelphus, wild cherry, etc.; with abundance of showy and fragrant herbaceous plants growing about them, or out in the open in beds by themselves—lilies, Mariposa tulips, brodiæas, orchids—several species of each,—iris, spraguea, draperia, collomia, collinsia, castilleia, nemophila, larkspur, columbine, goldenrods, sunflowers, and mints of many species, honeysuckle, etc., etc. Many fine ferns dwell here, also; especially the beautiful and interesting rock-ferns,—pellæa, and cheilanthes of several species, —fringing and rosetting dry rock-piles and ledges; woodwardia and asplenium on damp spots with fronds six or seven feet high, the delicate maidenhair in mossy nooks by the falls, and the sturdy broad-shouldered pteris beneath the oaks and pines.

It appears therefore that Hetch-Hetchy Valley, far from being a plain common rockbound meadow, as many who have not seen it seem to suppose, is a grand landscape garden, one of Nature's rarest and most precious mountain mansions. As in Yosemite, the sublime rocks of its walls seem to the nature-lover to glow with life, whether leaning back in repose or standing erect in thoughtful attitudes giving welcome to storms and calms alike. And how softly these mountain rocks are adorned, and how fine and reassuring the company they keep—their brows in the sky, their feet set in groves and gay emerald meadows, a thousand flowers leaning confidingly against their adamantine bosses, while birds, bees, and butterflies help the river and waterfalls to stir all the air into music—things frail and fleeting and types of permanence meeting here and blending, as if into this glorious mountain temple Nature had gathered her choicest treasures, whether great or small, to draw her lovers into close confiding communion with her.

Strange to say, this is the mountain temple that is now in danger of being dammed and made into a reservoir to help supply San Francisco with water and light. This use of the valley, so destructive and foreign to its proper park use, has long been planned and prayed for, and is still being prayed for by the San Francisco board of supervisors, not because water as pure and abundant cannot be got from adjacent sources outside



GIANT OAKS IN THE FERN GARDENS OF HETCH-HETCHY.

From photograph by F. M. Fultz, 1907.

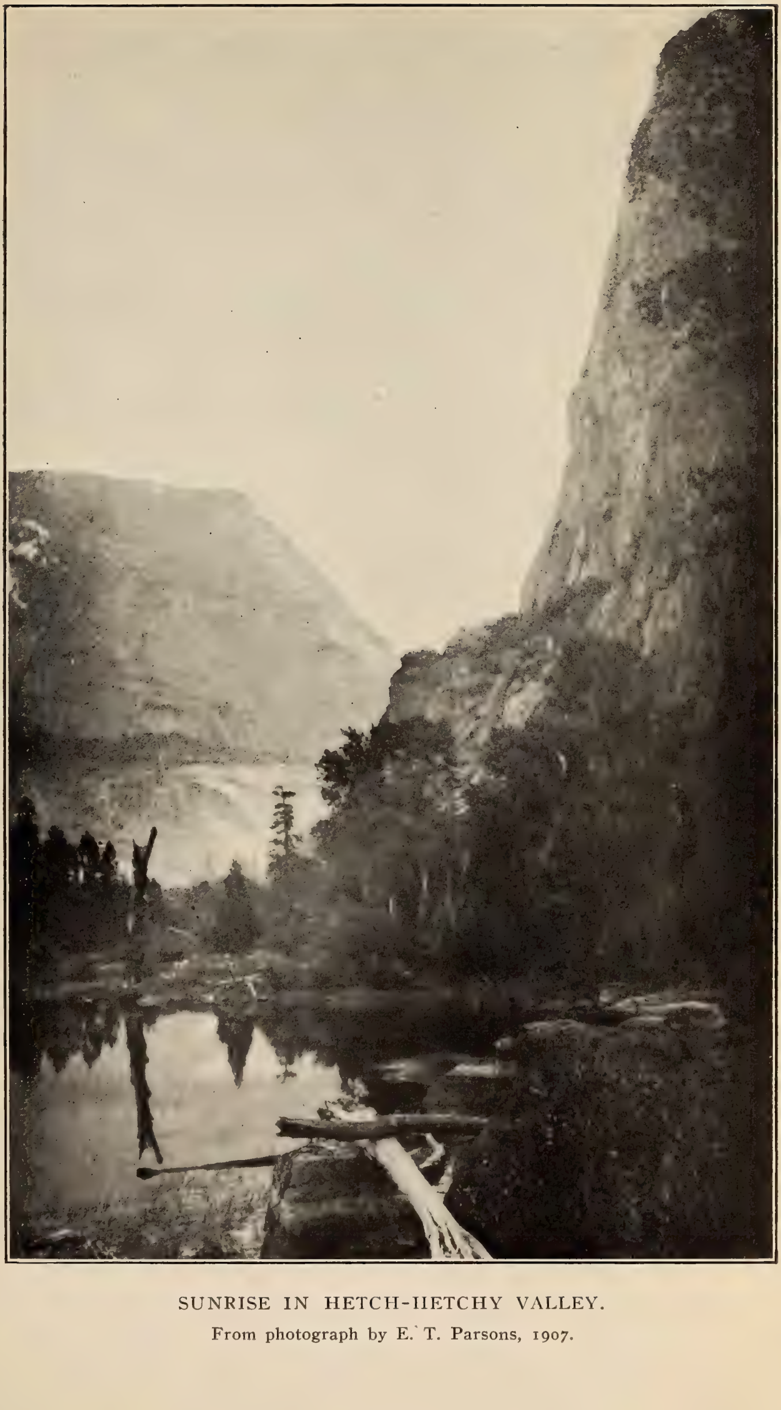
the park,—for it can,—but seemingly only because of the comparative cheapness of the dam required.

Garden- and park-making goes on everywhere with civilization, for everybody needs beauty as well as bread, places to play in and pray in, where Nature may heal and cheer and give strength to body and soul. This natural beauty-hunger is displayed in poor folks' window-gardens made up of a few geranium slips in broken cups, as well as in the costly lily gardens of the rich, the thousands of spacious city parks and botanical gardens, and in our magnificent National Parks,—the Yellowstone, Yosemite, Sequoia, etc.,—Nature's own wonderlands, the admiration and joy of the world. Nevertheless, like everything else worth while, however sacred and precious and well-guarded, they have always been subject to attack, mostly by despoiling gain-seekers,—mischief-makers of every degree from Satan to supervisors, lumbermen, cattlemen, farmers, etc., eagerly trying to make everything dollarable, often thinly disguised in smiling philanthropy, calling pocket-filling plunder "Utilization of beneficent natural resources, that man and beast may be fed and the dear Nation grow great." Thus long ago a lot of enterprising merchants made part of the Jerusalem temple into a place of business instead of a place of prayer, changing money, buying and selling cattle and sheep and doves. And earlier still the Lord's garden in Eden, and the first forest reservation, including only one tree, was spoiled. And so to some extent have all our reservations and parks. Ever since the establishment of the Yosemite National Park by act of Congress, October 8, 1890, constant strife has been going on around its borders, and I suppose will go on as part of the universal battle between right and wrong, however its boundaries may be shorn or wild beauty destroyed. The first application to the Government by the San Francisco supervisors for the use of Lake Eleanor and the Hetch-Hetchy Valley was made in 1903, and denied December

22d of that year by the Secretary of the Interior. In his report on this case he well says: "Presumably the Yosemite National Park was created such by law because of the natural objects, of varying degrees of scenic importance, located within its boundaries, inclusive alike of its beautiful small lakes, like Eleanor, and its majestic wonders, like Hetch-Hetchy and Yosemite Valley. It is the aggregation of such natural scenic features that makes the Yosemite Park a wonderland which the Congress of the United States sought by law to preserve for all coming time as nearly as practicable in the condition fashioned by the hand of the Creator—a worthy object of national pride and a source of healthful pleasure and rest for the thousands of people who may annually sojourn there during the heated months."

The most delightful and wonderful campgrounds in the park are the three great valleys—Yosemite, Hetch-Hetchy, and Upper Tuolumne; and they are also the most important places with reference to their positions relative to the other great features—the Merced and Tuolumne cañons, and the High Sierra peaks and glaciers, etc., at the head of the rivers. The main part of the Tuolumne Valley is a beautiful spacious flowery lawn four or five miles long, surrounded by magnificent snowy mountains. It is about 8,500 feet above the sea, and forms the grand central High Sierra campground from which excursions are made to the noble mountains, domes, glaciers, etc.; across the range to the Mono Lake and volcanoes; and down the Tuolumne Cañon to Hetch-Hetchy. But should Hetch-Hetchy be submerged, as proposed, not only would it be made utterly inaccessible, but the sublime cañon way to the heart of the High Sierra would be hopelessly blocked. None, as far as I have learned, of all the thousands who have seen the park is in favor of this destructive water scheme.

My last visit to the valley was made in the autumn of last year, with William Keith, the artist. The leaf-



SUNRISE IN HETCH-HETCHY VALLEY.

From photograph by E. T. Parsons, 1907.

colors were then ripe, and the great god-like rocks in repose seemed to glow with life. The artist, under their spell, wandered day after day along the beautiful river and through the groves and gardens, studying the wonderful scenery; and, after making about forty sketches, declared with enthusiasm that in picturesque beauty and charm Hetch-Hetchy surpassed even Yosemite.

That any one would try to destroy such a place seemed impossible, but sad experience shows that there are people good enough and bad enough for anything. The proponents of the dam scheme bring forward a lot of bad arguments to prove that the only righteous thing for Hetch-Hetchy is its destruction. These arguments are curiously like those of the devil devised for the destruction of the first garden — so much of the very best Eden fruit going to waste, so much of the best Tuolumne water. Very few of their statements are even partly true, and all are misleading. Thus, Hetch-Hetchy, they say, is "a low-lying meadow."

On the contrary, it is a high-lying natural landscape garden.

"It is a common minor feature, like thousands of others."

On the contrary, it is a very uncommon feature, after Yosemite, the rarest and in many ways the most important in the park.

"Damming and submerging it 175 feet deep would enhance its beauty by forming a crystal-clear lake."

Landscape gardens, places of recreation and worship, are never made beautiful by destroying and burying them. The beautiful lake forsooth would be only an eyesore, a dismal blot on the landscape, like many others to be seen in the Sierra. For, instead of keeping it at the same level all the year, allowing Nature to make new shores, it would of course be full only a month or two in the spring, when the snow is melting fast; then it would be gradually drained, exposing the slimy sides of the basin and shallower parts of the bottom, with the gathered drift and waste, death and decay, of the upper basins, caught here instead of being swept on to decent natural burial along the banks of the river or in the sea. Thus the Hetch-Hetchy dam-lake would be only a rough imitation of a natural lake for a few of the spring months; an open mountain sepulcher the others.

"Hetch-Hetchy water is the purest, wholly unpolluted, and forever unpollutable."

On the contrary, excepting that of the Merced below Yosemite, it is less pure than that of most of the other Sierra streams, because of the sewerage of campgrounds draining into it, especially of the Big Tuolumne Meadows campgrounds, where hundreds of tourists and mountaineers, with their animals, are encamped for months every summer, soon to be followed by thousands of travelers from all the world.

These temple destroyers, devotees of ravaging commercialism, seem to have a perfect contempt for Nature, and instead of lifting their eyes to the mountains, lift them to dams and town skyscrapers.

Dam Hetch-Hetchy! As well dam for water-tanks the people's cathedrals and churches, for no holier temple has ever been consecrated by the heart of man.

EXTRACTS FROM STATE GEOLOGIST PROFESSOR J. D. WHITNEY'S YOSEMITE GUIDE-BOOK (PUBLISHED 1874)

ON THE HETCH-HETCHY VALLEY, THE BIG TUOLUMNE MEADOWS, AND THE TUOLUMNE CANON,

SHOWING THEIR RELATIONSHIP, ETC.

"The Hetch-Hetchy is 3,650 feet above the sea-level, or 300 feet below the Yosemite; it is three miles long east and west, but is divided into two parts by a spur of granite which nearly closes it up in the center. The portion of the valley below this spur is a large open meadow, a mile in length, and from an eighth to half a mile in width, with excellent grass, timbered only along the edge. The upper part of the valley is a mile and three quarters long, and from an eighth to a third of a mile wide, well timbered and grassed. The walls of this valley are not quite so high as those of Yosemite; but still anywhere else than in California they would be considered as wonderfully grand. On the north side of Hetch-Hetchy is a perpendicular bluff, the edge of which is 1,800 feet above the valley, and having a remarkable resemblance to El Capitan. In the spring, when the snows are melting, a large stream is precipitated over this cliff, falling at least 1,000 feet perpendicular. The volume of water is very large, and the whole of the lower part of the valley is said to be filled with its spray. A little farther east is the Hetch-Hetchy Fall, the counterpart of the Yosemite. The height is 1,700 feet. It is not quite perpendicular. The volume of water is much larger than that of the Yosemite Fall, and in the spring its noise can be heard for miles. The position of this fall in relation to the valley is exactly like that of the Yosemite Fall in its valley, and opposite to it is a rock much resembling the Cathedral Rock, and 2,270 feet high. . . .

"The valley of the Tuolumne [or Big Tuolumne Meadows] is one of the most picturesque and delightful in the High Sierra. Situated at an elevation of between 8,000 and 9,000 feet above the sea-level, surrounded by noble ranges and fantastically shaped peaks which rise from 3,000 to 4,000 feet higher, and from which the snow never entirely disappears, traversed by a clear rapid river, along which meadows and clumps of pines alternate, the effect of the whole is indeed most superb. The vicinity of Soda Springs [on the north side of the valley], and, indeed, the whole region about the head of the upper Tuolumne, is one of the finest in the State for studying the traces of the ancient glacier system of the Sierra Nevada." Glacier-polished granite extends over a vast area, and "this is so perfect that the surface is often seen from a distance to glitter with the light reflected from it, as from a mirror. The main portion of the valley is about four miles long, and from half to a third of a mile wide."

"The cañon of the Tuolumne runs in a nearly east-and-west direction, about parallel with that of the Merced, and some twelve miles north of it. The length of the portion included between the Tuolumne Meadows, at Soda Springs, and the head of the Hetch-Hetchy, is about twenty-two miles. During this distance the river runs everywhere in a very narrow gorge, with lofty and very precipitous walls, and with frequent and beautiful cascades, as might be expected, since the fall of the river in the distance named is about 4,650 feet, or over 200 feet to the mile. It is to be regretted that it is not possible to pass through the cañon with animals, entering at the Hetch-Hetchy and coming out at the upper end, or *vice versa*. This will undoubtedly be done in time."

TO JOSEPH LE CONTE.

By Charles Keeler.

Peace reigns in these vast halls where thou hast roamed
  And wrested secrets from the patient rocks,
And watched the waterfalls that brightly foamed,
  And marked the migrants in tumultuous flocks,—
With kindly eye interpreting each sign
As evidence of spirit power benign.

Still rear the rocks their peerless bulwarks high,
  Still sweep the cataracts elate and bright,
Still joyous hosts of flowers bloom and die,
  Still lift the pines their tassels to the light,
As when, so late, thou pondered on their ways
Through all the brightness of Sierra days.

Here in these consecrated haunts sublime,
  Belovèd through thy life's perennial youth,
Kind Nature whispered of the parting time
  And led thy spirit on its quest of truth
Beyond these symbols into high domains
Where goals that baffle now, the soul attains.

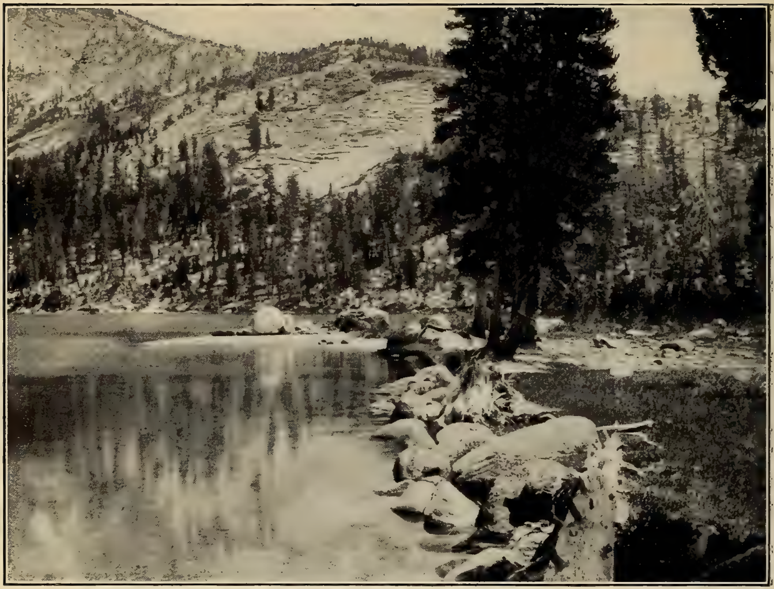
Dear friend who late unsealed my eyes to lore
  Of Nature's mystic laws, I love to think
That here in swift transition thou didst soar
  From earth's to heaven's splendor, and didst drink
Life's last draught from the mountains' melted snow,
And thus rejoicing on thy journey go.

I love to think that all thy cherished thought
  Of nature, in consummate splendor wild
Here gathered, should have in its beauty caught
  Thy being, and upgathered thee, its child,
Leading thee on, untroubled, unafraid,
Toward mightier phantasies in spirit glade.

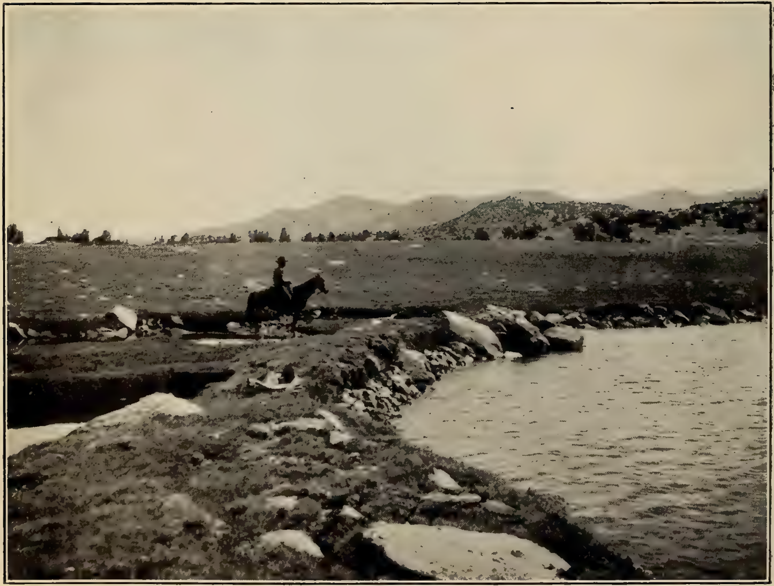
O may the gracious memory of thy name,
  Thus linked by death with thine, Yosemite!
Still haunt the peaks in sunset's light aflame,
  For generations yet unborn to see
The splendor of the rocks and learn to trace
In granite symbols thy mysterious grace.

YOSEMITE VALLEY, July 18, 1907.

(Read by the author at the flower show held on this date at the Le Conte Memorial Lodge.)



LAKE RAMPART; WEST SHORE OF TENAYA.



LAKE RAMPART; UPPER BASIN OF RAFFERTY CREEK.

LAKE RAMPARTS.*

By G. K. Gilbert.

One summer afternoon, thirty-five years ago, I rode along a high plateau in southern Utah. My companions were Hoxie, a young army officer; Weiss, a veteran topographer, who mapped our route as we went; and Kipp, an assistant whose primary duty was to carry a barometer. Not far behind us was a pack-train. We were explorers, studying the geography and geology of a strange land. About us was a forest of pine and fir, but we rode through a lane of sunlit prairie cradled in a shallow valley. Suddenly the floor of the prairie came to an end, and we halted on the crest of a cliff overlooking a vast expanse of desert lowland. The desert was not a monotonous plain, like that of northwestern Utah, but a land of mesas, cañons, buttes, and cliffs, all so bare that the brilliant colors of their rocks shone forth, —orange, red, chocolate, blue, and white,—fading slowly into the gray of the remote distance. We were looking across the broad barren tract through which the Colorado winds in Glen and Marble cañons, and of which the Painted Desert of Arizona is a minor division. To most of us it was a supreme vision of beauty and grandeur as well as desolation, a scene for which words were inadequate; and we stood spellbound. The silence was at last broken by Kipp, who exclaimed, "Well, we 're nicely caught!" and his discordant note so carried us from the sublime to the ridiculous that our tense emotion found first expression in a laugh.

The reminiscent story has been told to illustrate the relation of the traveler's appreciation to his point of view. Kipp saw only that the cliff at our feet barred further progress in that direction, and all that had appealed to the others most strongly was lost on him. Hoxie, Weiss, and I doubtless saw different things in the landscape, for we were trained in diverse schools, but our personal points of view all included the esthetic factor, and that factor lifted us above the plane of petty annoyance into a realm of exalted emotion. We saw what we had eyes to see. Our point of view was the measure of our perception and appreciation.

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* Published by permission of the Director of the U. S. Geological Survey.

The principle is a broad one and applicable to life in all its phases, but it is peculiarly true of the traveler; and the temporary sojourner in the Sierra is essentially a traveler. Each member of a Sierra Club outing brings to the mountains a point of view, and by that point of view the quality of his pleasure is controlled. I am not prepared to say that one point of view necessarily yields more pleasure than another, but I believe there is a distinct gain whenever one's personal horizon is enlarged. To one whose main motive is recuperative or vegetative or athletic there is advantage in adding an artistic or social or scientific motive.

Scientific motives—of which I wish especially to speak—are of two types, endeavor to see and endeavor to explain. One may simply observe and compare the things of Nature, noting their similarities, their differences, and their relations, or one may also seek to discover the causes of their relations. One may note, for example, that there are pines all through the mountains; that they have common characters of leaf and cone, which mark them as pines; that they differ among themselves in various ways, so that distinct kinds may be recognized; and that each kind is restricted to certain altitudes, so that collectively they make an orderly procession from foothills to timber-line. Or one may seek to discover why there are mounds about the bases of large trees; why there are trout in some streams and not in others; or why a meadow camp is cooler at night than one in a neighboring grove. To pursue such a line of study no preliminary training is necessary—nothing but attention. And the available themes are practically infinite in number and variety. The various insects, birds, mammals, and reptiles, the varied trees, shrubs, and flowering plants, the minerals and rocks, the forms of the landscape, the streams, the snow, the winds, the clouds,—all invite and repay attention; and problems appear at every turn. To the professional investigator such themes are a principal motive, and his purpose is to increase the sum of human knowledge. For him, indeed, attention is not the only requisite; he must have systematic methods of work, and he must acquaint himself with the work of others in his chosen field. To the business man, the professional man, or the teacher seeking recreation—to the layman, in a word, in scientific study—the scientific motive is secondary, and instead of considering the advance of science he need think only of his personal profit in intellectual growth and an added zest to life.

The homily in which I have indulged may be regarded as the introduction and defense of a somewhat technical article; or the pages which follow may be regarded as the illustration of the theme of the homily, and an attempt to develop interest in one of the minor features of Sierra topography.

On the shores of many lakes in the Sierra are rows of boulders. Sometimes they are strung along, one or two at a place; sometimes massed together so as to constitute a low ridge. They are small and large, ranging up to a diameter of several feet. In every case their position is close to the water, usually just at the water's edge. Such boulder lines and boulder ridges are known also in other regions, and have received the name of *lake ramparts*. Two examples are pictured in the accompanying plates.

Whence come these boulders? Usually on the adjacent land other boulders are to be found, in every way similar to those at the shore except that they are irregularly scattered over the surface. Usually, also, in the shallow water near the shore there are no boulders, or if any are seen they are of large and exceptional size. Should one reason from these facts that the boulders of the rampart came from the land, or that they came from the water? An argument might be made in favor of either side, but only one of the arguments would find favor with the geologist, because he has a theory to account for the general distribution of boulders throughout the region of abundant lakes. He has learned that they were transported by glaciers, and that except where they are massed together in moraines the glaciers merely strewed them over the surface. While the glaciers were doing their work there was no distinction of lake and land, and the lake basins received their quotas of boulders along with the surrounding dry land. To the geologist, therefore, the absence of the boulders from the shallows of the lake is as remarkable a phenomenon as their abundance at the shore; and the two facts are fitted together accurately by the theory that the boulders now at the shore were once scattered over the lake bottom in shallow water, and have by some agency been moved toward the shore and massed together there.

By what agency were the boulders moved? Were they gathered from the water and heaped along the shore by the aboriginal inhabitants of the country? That, so far as I know, was the first guess made; and the name "rampart" was given in allusion to the general resemblance which some of the boulder ridges bear to walls built for purposes of fortification. The idea is not especially plausible, because the position of the ramparts does not accord with any rational theory of attack and defense; but the broader idea that the work of assembling the boulders was performed by men is not easily disproved. The evident reasons against it are mostly negative: the lack of a plausible motive, and the fact that we have no definite knowledge of similar work having been done by men. Nevertheless, the human theory has been practically abandoned; for, though not disproved, it has been effectually displaced by a natural theory which seems reasonable and adequate.

A second tentative explanation is that the boulders were moved by waves. We know that the waves which beat on the shores of lakes accumulate sand and gravel in beaches, and we know that the greater ocean waves roll boulders also. But the waves of lakes are smaller and weaker than those of the ocean, and they are very weak in comparison on many small lakes where the ramparts are characteristically developed. There are other reasons for rejecting the wave theory, but as the lack of power seems sufficient, they need not be stated.

The theory which geographers have accepted makes ice the agent—the sheet of ice which constitutes the winter armor of the lake. If this theory is true, then the ramparts should be found only in cold countries, and such appears to be the fact. They have been described in Canada, in the New England States, in various States bordering the Lawrentian lakes, and in northern Europe. So far as I am aware, they have not been described in warmer regions, and I have myself noted their absence in Virginia, where the winter coating of ice is thin, in Florida, where the lakes never freeze, and in various parts of Marin County, California.

Stated in full the theory has the following form. In countries where the winter is cold and long, ice forms on all lakes of moderate size and depth, and acquires a thickness of several feet. Ice differs from most solids in that it is made to occupy less space by melting, but so long as it remains solid it follows the general law of solids by contracting when cooled and expending when warmed. It is to the contraction and expansion of ice that the theory appeals. The rate of change has been measured in physical laboratories and found to be such that a plate of ice one mile long would be shortened one foot by having its temperature lowered a little more than seven degrees of the Fahrenheit scale.

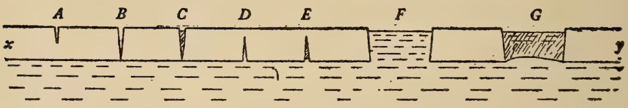

FIGURE 1.—Diagrammatic section of sheet ice on a lake, illustrating modes of cracking from changes of temperature.

In Figure 1, $x\,y$ represents, in section, a sheet of ice resting on the water of a lake. We may think of the temperature of the ice as initially 32°. When the air becomes quickly colder the upper part of the ice is cooled and made to shrink, with the result that many shallow cracks are formed, as diagrammatically shown at *A*. If the cold continues, its effect is soon felt through the whole thickness of the ice, but the bottom layer is kept at 32° by the water in contact with it. The crack extends to the bottom, but retains its wedge form (*B*). Water finds its way into the crack, rises nearly to the top, and then freezes (*C*). If, now, the weather moderates and the upper part of the ice-sheet is warmed, expansion takes place, but the process is not the simple inverse of the contraction. The deeper of the cracks that were opened cannot be closed again, because they are occupied by the wedges of new ice. The upper part of the sheet therefore elongates, and in so doing carries with it the lower part of the sheet. The elongation of the lower part causes a new system of cracks (*D*), which start from the bottom. Unless the temperature has fallen quite to 32°, there is more or less freezing in these cracks, so that they become partly plugged by wedges of new ice (*F*). Thus, by to-and-fro changes between weather moderately cold and weather very cold, wedges of new ice are inserted in the lake ice from above and below, and it is made to expand horizontally.

Usually some of the cracks from above, instead of merely penetrating to the bottom (*B*), gape widely, so as to open a lane of water (*F*), and such a lane may be closed by new ice (*G*). Cracks of this type run from side to side of long narrow lakes (Fig. 2), or from cape to cape of lakes with irregular shores (Fig. 3).

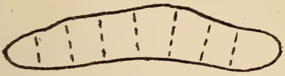

FIGURE 2.—Outline of lake with parallel shores, showing arrangement of master cracks.

The enlargement of a sheet of lake ice by this process thrusts its edges against the shores. The force of the thrust is measured by the strength of the ice. Its results are various, depending chiefly on the character and outline of the shores. Where a shore is steep, the ice-sheet may break against it (Fig. 4, *H*). Where the resistance to shoreward movement is strong in both directions, the ice-sheet may buckle up or down (*I* or *J*), creating an ice-ridge, or a lane of open water. These features, known in Sweden as *råkar,* usually follow broad cracks of the type marked *G* in Figure 1.

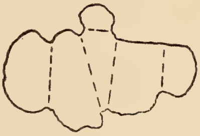

FIGURE 3.—Outline of irregular lake, showing arrangement of master cracks.

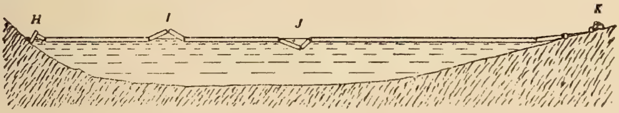

FIGURE 4.—Ideal section of ice sheet on a lake, illustrating effects of thrust caused by changes of temperature.

On gently shelving shores the edge of the sheet is merely slidden landward, bending or slightly cracking as it rises along the slope (*K*), and carrying with it whatever may be frozen to it or in it. Some of the sand, mud, pebbles, etc., constituting the bottom is thus moved toward the land; and boulders which project high enough to be firmly grasped by the ice are dragged in the same direction, plowing the bottom as they go. In the ensuing summer, when winds stir the surface of the lake, the waves remodel the strand, obliterating much of the work of the ice-thrust, but the shifted boulders remain where the ice left them. The next winter's ice-sheet carries them another stage in the same direction, and eventually they reach the limit of its action. Thus all the boulders which originally lay in the shallow water are finally assembled along the shore, where they constitute the lake rampart.

Plate A shows a rampart on the west shore of Tenaya Lake, not far from its outlet. On the land at the right is a sprinkling of boulders, such as we may suppose to have once existed on the lake-bed at the left, but none now jut from the surface of the water. The larger boulders of the rampart are three or four feet in diameter, and in the distance there are two of still greater size. But the largest may possibly occupy the positions given them originally by the ancient glacier. Plate B shows the margin of a lake on the plateau drained by Rafferty Creek. The rampart here forms a broader ridge, on which soil has gathered, so that it is covered by vegetation. Just here the lake has its outlet, which discharges through openings between the boulders of the rampart. In this view also may be noted the scattered boulders of the adjacent plain, and the absence of boulders from the shallow water of the lake.

The theory is not a mere abstract deduction from general principles, but finds support in a body of concrete facts. The cracking of lake ice from cold is a familiar occurrence wherever winters are severe. As a boy, in western New York, I skated on a landlocked bay several miles long, and each winter its ice-sheet was divided by cracks that ran from side to side. On a still, cold night I have heard them form, the ice bursting with a booming sound that slowly died away. I thought then that a crack which started near me required a minute or more to span the bay, but suspect now that its propagation was much swifter than that of the sound-waves on which my impression depended. Sometimes the cracks opened so widely that the skaters found pleasant excitement in crossing them by flying leaps; and a crack into which I once fell must have been three or four feet broad. Being then quite innocent of theories, I did not compare its width with the temperature, but the air that day must have been bitterly cold, for my clothes were frozen before I could reach the nearest house.

Where winters are long, frozen lakes are often utilized as regular routes of travel, and when this is done the cracks and subsequent bucklings constitute obstructions that must be dealt with, if accidents are to be avoided. Often, too, the crowding of the ice against the shore makes a zone of insecurity which must be bridged by the roadmaker. These obstacles to travel early drew attention to the expansion and contraction of lake ice and led to its rational explanation.

Finally the shoreward movement of a boulder has been almost directly observed. Its change of position has been noted from day to day; and as the ice melted in the spring the furrow plowed by its lower edge has been discovered. So the chain of evidence is practically complete.

There is a literature of the subject, from which I have selected a few titles, but I do not seriously advise the members of the Club's outing parties to consult it. They will find far more pleasure and profit in personal studies on the shores of the lake, especially if they are able to visit them before the complete melting of the ice and while the effects of the winter's thrusting are still fresh and unimpaired by the wash of waves.

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NEAR SIERRA CLUB CAMP IN TUOLUMNE MEADOWS.

A GLIMPSE OF THE TUOLUMNE CAÑON.

From photographs by E. T. Parsons, 1907.

THE GRAND CAÑONS OF THE TUOLUMNE AND THE MERCED.

By Marion Randall Parsons.

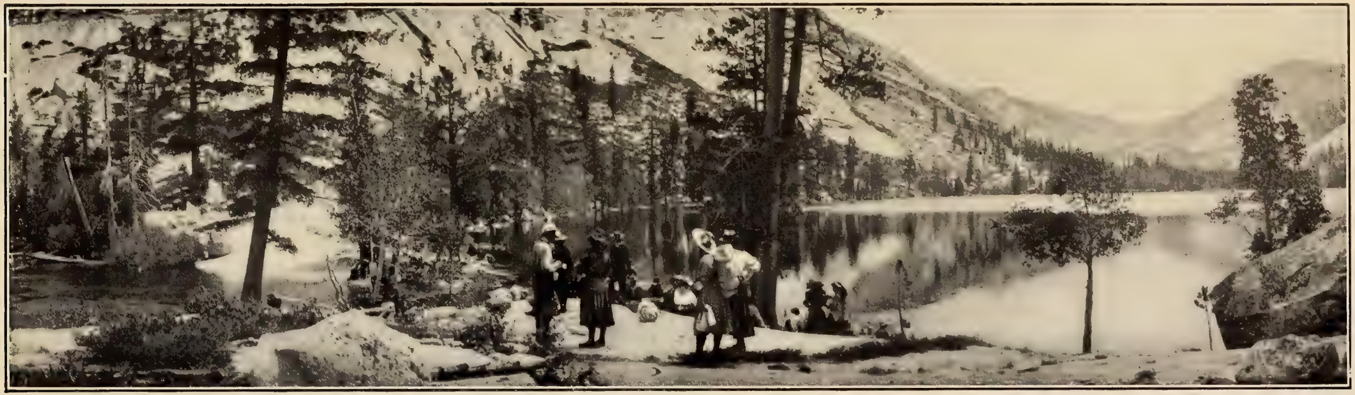
The Sierra Club camp for the Outing of 1907 had been established in the Tuolumne Meadows more than a week before we started, seventy strong, on the trip into the cañon of the Merced, a region which none of us had ever visited before. With a pack-train of twenty animals we left camp early one morning, taking the Lyell trail as far as Rafferty Creek, and there leaving it to follow an old sheep trail leading up its west bank to Tuolumne Pass. Near the top of the pass the trail emerges from the scattering forest of tamaracks into a broad meadow-land, walled on either side with snow-streaked mountains. Half a mile of boulder-strewn country, still partly covered with snow, brought us to the base of Vogelsang Peak, where the trail turns, crossing the divide to the north of the peak and striking down the cañon of the McClure Fork.

The McClure Fork rises in a grim, desolate cirque between McClure, Vogelsang, and Florence. Passing rapidly through the alpine meadow region and the rocky home of the juniper, it races down to meet the madcap companions that join it among the hemlocks and tall firs that border its lower reaches. A long zigzag brought us down at last to the Merced Cañon, here a level floor covered with a thick growth of conifers and aspens. The fir grove where camp was established was full of dusky shadows, but the blazing camp-fires, the merry voices, and the moving figures with their barbaric touches of red and green made a busy scene, full of life and stir, in strange contrast to the twilight stillness of the woods. A sub-forest of brakes stretched beneath the tall shafts of the firs, and a tangle of willows and aspens bordered the river, a quiet, dark, smoothly flowing stream that flashed greetings to the stars a little later when the moon shone out.

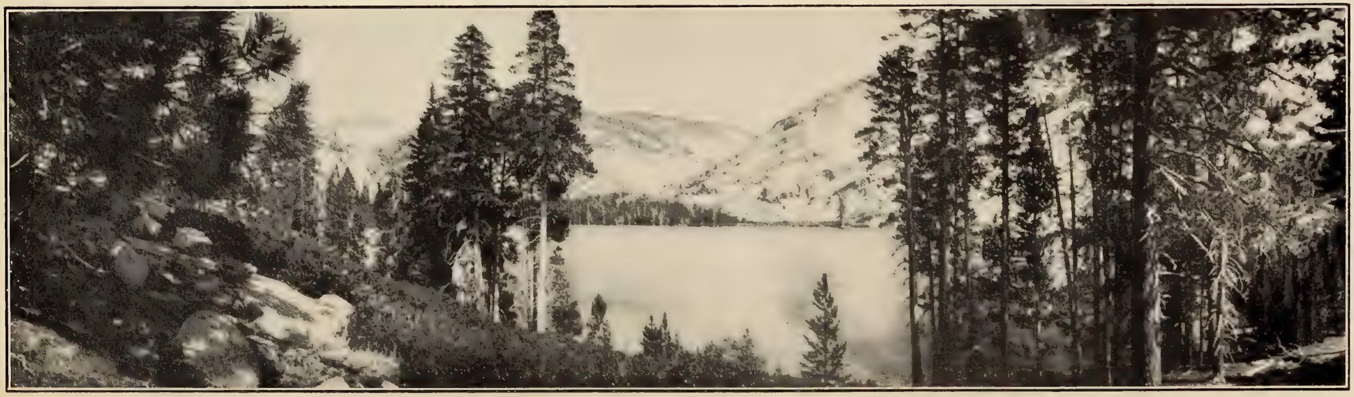
Morning brought an increased realization of the cañon's wonderful beauty. Lying only a few miles above Little Yosemite, it is rarely visited, as the cañon becomes almost impassable a couple of miles below Lake Merced, and for many years the only trail entering it was the steep, circuitous one we had traveled. A trail has now been built to join the Sunrise Trail, but the Upper Merced Cañon is still far enough off the beaten track to preserve all the freshness of a virgin country.

The cañon has two somewhat unusual features—its lakes, Washburn and Merced, smooth, deep-blue sheets of water, and the curious mingling of forest-land and meadow in the alluvial stretches that line the river bank. A cañon meadow is generally an open bit of country, bordered, but unencroached upon by trees; while here dark firs and glinting aspens are scattered over the soft sward, throwing now a deep shadow, now a twinkling green shading across the tender grasses and flowers. Between the rocky shoulder just below Lake Merced and the wall of granite that now shuts the cañon off from Little Yosemite lies Lost Valley, one of those wooded parks rich in meadows and flowers which Dame Nature loves to hide away in the heart of a grim waste of granite rocks. The whole Merced basin is an ideal refuge for deer, and we had many demonstrations of their number and fearlessness, one of them even venturing to investigate a sleeping-bag and its occupant.

The second morning of our stay saw a great weighing of provisions and packing of bedding, for it marked the beginning of our knapsack trip over to Mt. Ritter. Only fifteen of us undertook this, as we had five days' provisions to carry and our way led across a difficult and, to us, entirely unknown country. The first day's travel was short, and, except for a bit of talus work along the shore of Lake Washburn, comparatively easy. Near the outlet of the lake we crossed to the south side of the river to avoid



LAKE WASHBURN, MERCED CAÑON.



LAKE MERCED, MERCED CAÑON.
From photographs by E. T. Parsons, 1907.

some huge blocks of granite that made traveling with knapsacks almost impossible, but we later found considerable difficulty in making our way along the southern shore of the lake. A very short stretch of blasting would make the more open northern bank accessible to pack-trains, which could then be taken as far as the amphitheater at the head of the cañon. We did not regret the extra work, however, for in making our way up the southern bank of the river above the lake we found, bubbling forth close to the river, a soda spring whose waters were pronounced to be the equal of the Lambert Spring—even better, some of us maintained. Soon afterward we reached the rocky amphitheater where we had planned to camp; but, finding that we were still fresh, and knowing how difficult the next day's work must be, we decided to go on a little farther. So after a brief rest we shouldered our packs again and climbed to the top of the cliff over which the Triple Peak Fork tumbles. Near the head of the fall we made camp. The tamaracks gave but a scanty shelter overhead, and the skies looked ominously like rain; but we chose the most sheltered spots for our sleeping-bags, built a roaring fire against a great boulder, and, after a business-like and highly satisfactory dispatch of supper, felt that cheerful unconcern towards mere weather that marks the well-fed mountaineer.

Evening wrought a wonderful change in the somewhat desolate spot. The scrawny tamaracks, outlined against the brilliant clouds, formed a sky-line of unexpected picturesqueness. At our feet, to the westward, lay the dusky cañon, whose shadows were broken at the farther end by a bit of flaming sunset glow mirrored in the still surface of Lake Washburn. Beside us the turbulent stream, while still aglimmer with the light from the west, caught a new, strange gleam from the east, and turning we saw the whimsical face of the full moon appearing above the tamaracks—a midsummer moon; and who knows what revelries the hidden elves were holding in the falls below us where the silver drops were flung so high?

Early the following day, just as the chain of great peaks from Clark to Isberg was coming into sight above the forest-clad walls of the cañon, we crossed the trail that coming from the south, from Isberg Pass, joins the Tuolumne Meadows trail in the McClure Fork Cañon. Had we chosen to follow this, sunset would have found us back in camp in the Tuolumne Meadows. But Ritter still called; so we turned our faces to the east and trudged on. Here for the present we must leave the Ritter party, whose story will be told later, for this paper is designed to describe the course of a possible cañon highway from the Yosemite to Hetch-Hetchy.

Two days after our return from Ritter sixteen of us, the first detachment of the twenty-eight members who made the descent this year, started on another knapsack trip—down the Tuolumne Cañon. We left camp armed with four cameras, a light supply of bedding, and provisions for six days. Four days are ample for a scramble through the cañon, but we planned to spend one day in a partial exploration of Pate Valley and have enough extra time to make loitering in the more beautiful parts possible.

We crossed the river at our Tuolumne camp and followed the well-marked trail that leads down the north side as far as Conness Creek. The late snows this year kept back the summer growth, and save in occasional little gardens especially favored by the sun few flowers were yet abloom. But here in the lower reaches of the Tuolumne Meadows all in a moment summer had come. So often in a mountain scene a single color strikes the dominant note. This was a purple morning. Purple daisies and wee violets dotted the meadow; under the scattering trees higher on the slope masses of lupine were spread, and the shadows on the great domes across the meadows and on the cliffs farther down the river were all suggestive of the same tone.

Near the end of the meadows the trail takes an upward turn, soon to plunge down again through young hemlock groves into the cañon of Conness Creek. Immediately above and below the junction of this stream with the Tuolumne are the first three falls of the wonderful series of stormy cataracts which mark the river's course through this wild rockbound gorge. Below the falls the river flows quietly for a space, between banks lined with mingled pines and deciduous trees. Here

> "Willows whiten, aspens quiver,
> Little breezes dusk and shiver
> Thro' the wave that runs forever
> By the island in the river
> Flowing down to Camelot."

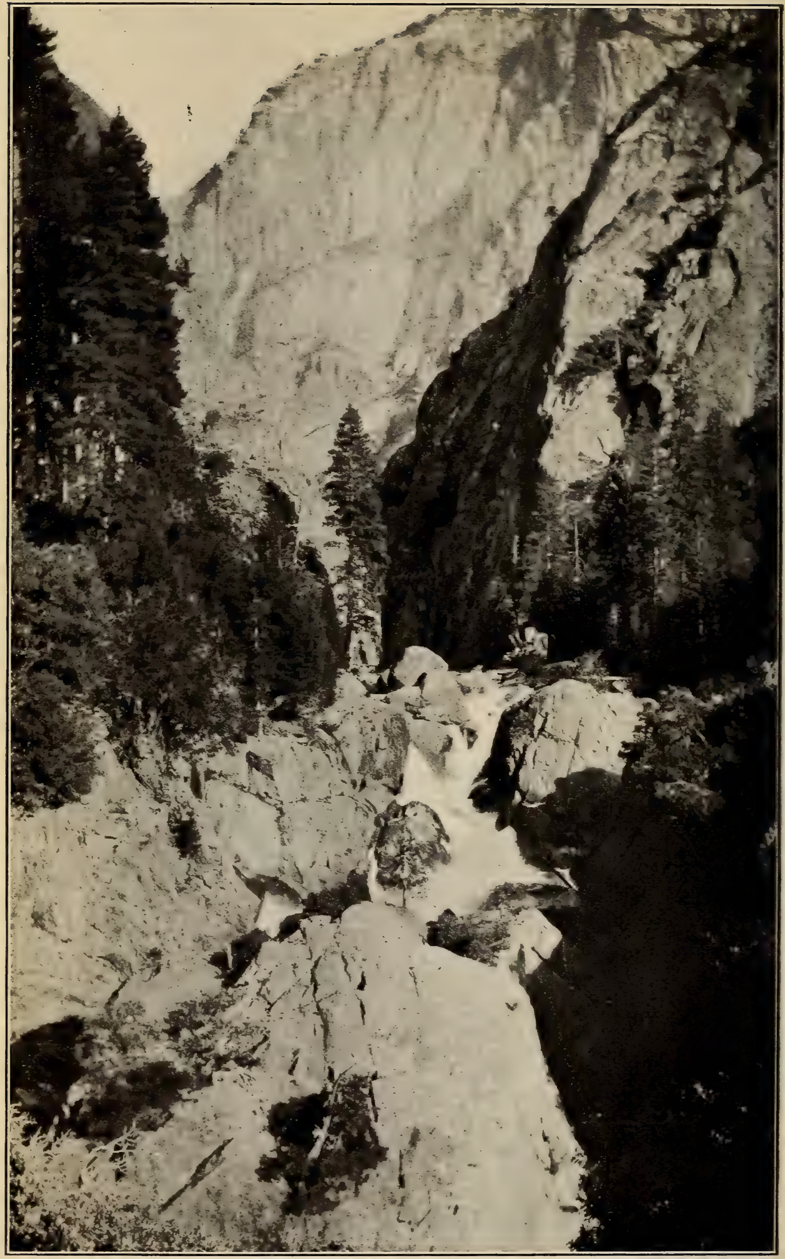
Many a legendary city lies at the river's end, for its path is an open highway into the land of dreams. Such a merry, blithesome companion it is, one of the great fellowship of voyagers, akin to the sailing clouds, the flocking birds—vagabonds all.

Alluring as the river's call was to all our vagabond crew, to those of us who possessed the piscatorial instinct it proved fairly resistless. For more trout were visible, lazily swimming about and provoking the rod, than would have sufficed to feed our lusty band for a month. In spite of the unwritten law that fishing were better postponed until the day's travel was over, one or two rods came apologetically forth, and for half an hour the happy fishermen wielded a busy arm.

All this had been mere pleasant dalliance, but soon the real work began. At the foot of the first great cliff a talus-pile, composed of huge blocks of granite interspersed with brush, completely filled the cañon from wall to river. Here it meant climbing and jumping from rock to rock, or, worse still, fighting our way through masses of stiff manzanita, chinquapin, or azalea, which caught in our packs and clothing and made each step a struggle. We soon had cause to regret our lingering in the easier paths, for sunset drew near and no sign of open country appeared. Coming at last to a spot where the brush was little more than a foot high and where the rocks were rather more scattered, we resolved to make the best of a bad business and go no farther that night. Our camp, while somewhat lacking in the elements of ease, had one distinctly novel feature—a glaciated kitchen. The rocks in the open spaces where it was possible to build a fire were all of smoothly polished granite, whereon our hob-nailed feet performed strange antics. But it was a wonderfully beautiful camp. We were on a bluff overlooking a great stretch of cañon; beside us the Upper California Fall boomed and thundered, and farther down we could see mist rising where the river took another wild plunge.

The Tuolumne is one of the largest of our Sierra rivers, much greater in volume than its quieter neighbor, the Merced. Its falls, often of an imposing height, are none of them sheer, none of them giving that impression of pure joy of living with which the Merced waters leap into the great Nevada abyss. For the Tuolumne's is a sterner, stormier course, beset with giant rocks against which even its splendid strength is impotently hurled, and its joy is the joy of battles. But it is a strange thing, standing beside one of these giant cataracts where the ground shakes with the impact and where every voice of wind or living creature is silenced in the roar of the maddened waters, to see under what a delicate fabric this Titan's force is veiled—a billowing, gossamer texture, iris-tinted, with jeweled spray flying high upon the wind.

For two hours the next morning our course was a continuation of the hard work of the previous evening, with the added trial of slippery glaciated surfaces where those of us who were not provided with rubber overshoes or tennis shoes had to work our way down by means of cracks in the granite and little tufts of grasses and brush growing in the larger crevices. Return Creek, which we had expected to find some difficulty in crossing, proved to be spanned by a convenient log, and beyond this for a short time we had somewhat easier traveling. We found that we generally made better progress by keeping close to the river, as there the brush was less



MUIR GORGE, TUOLUMNE CAÑON.

Copyright, 1908, by F. M. Fultz.

dense and frequent level alluvial deposits gave us the longed-for opportunity to walk upright instead of scrambling or crawling.

It is impossible to do justice to the cañon after one brief journey through it; impossible to set down in order the details of that day's travel and the next, confused as they were by the consciousness of tired muscles and eyes bewildered by the all too hurried succession of interests. Little more than impressions remain—memories of cliffs rising from three to five thousand feet above us; of a walk of half a mile on stepping-stones along the river; of more talus-piles; of the entrance into the rattlesnake zone; of a walk through a still forest of tall firs and young cedars, where our voices seemed to break the silence of ages; of more talus-piles; of a camp beneath the firs, among deep fern-beds, and of the red ants that there congregated; of more brush and more talus-piles; of a look down Muir Gorge and a hot climb up a thousand feet over the rocks to the cairn of stones containing the precious register; of a cliff extending to the river's edge which presented the alternative of edging across it on a crack or climbing a five-hundred-foot hill to get around it.

Near nightfall of the third day we chanced upon a bear trail at the head of Pate Valley which led us through a heavy growth of young cedars and past a swampy meadow, where we saw a bear-wallow, to the bank of Piute Creek, near its junction with the Tuolumne. Those arriving first at this spot built the fire and caught some fish, and it was a welcome sight to most of us to see the boiling water awaiting the coming of the soup powder and the cleaned fish ready for the tardy frying-pan. One by one the utensils and provisions appeared upon the scene (at that time of the day one does not worry over the safety of a fellow-hiker who has lingered overlong upon the trail; one laments the absence of the tea-kettle or the rice), and soon we were enjoying supper by the flickering light of the camp-fire and one tallow candle.

Pate Valley is a beautiful example of the gentler aspect of the cañon—a high-walled, heavily wooded valley, with clear, swift-running streams, tall fern-beds, and open grassy meadows dotted with oak-trees. During the day we spent there we were fortunate enough to find an old Indian encampment. One of the oak orchards, sloping back from the river, ended in a high rock wall whereon some hieroglyphics were painted in red, and near which were many traces of former Indian occupation, smoke-blackened rocks, piles of obsidian chips, and a mortar and pestle.

Having planned to cross the river at Pate Valley and make the rest of the trip on the south side, thus reversing the route taken by the party of three years ago, we were greatly relieved to find a log which with the aid of our long rope would serve to carry us across the first and largest branch of the river, here divided by a narrow, rocky island. The log was not very inviting to look upon. Its roots lay some ten feet from our bank, and this space was spanned by two smaller logs, one of which was inclined at a steep angle and very slippery. After crossing these and reaching the root there was a space of several feet where the big trunk was lying under rushing water. The rope, tied from the root to a branch at the farther end, served as a hand-rail, and one by one we slowly edged across. Over the second branch a great log had fallen, giving us a safe and easy crossing; but what was our dismay to find beyond this a third branch, fully as large as the second. Exploration up and down the little island showed that there was nothing to do but wade. The water came nearly to our waists and the current was quite strong, but with the help of the rope we made the crossing without accident.

Below Pate Valley the cañon walls are less precipitous and the river fall more gradual. From this point the brush was the worst difficulty we had to overcome. On the south side there are only three places after leaving Pate Valley where the course lies for any distance far

CROSSING ON LOG, PATE VALLEY.

A PORTION OF THE FLOWERY PARK-LIKE FLOOR OF HETCH-HETCHY.

From photographs by E. T. Parsons, 1907.

from the river—the first at the point where an old Indian trail enters the cañon, near Morrison Creek; the second about two miles above the Little Hetch-Hetchy; and the third immediately above it. In all of these places considerable climbing has to be done to surmount cliffs impassable at the river's edge.

It is to be hoped that before long the trails will be completed, making this whole wonderful cañon and its beautiful sister, the Merced, accessible to the many travelers who lack the strength to endure the hardships that at present beset the way through both cañons. The scenic splendor of such a circuit, starting from the Yosemite and traversing the Merced Cañon, the Tuolumne Meadows, the Tuolumne Cañon, and the Hetch-Hetchy, could never be equaled in the Sierra.

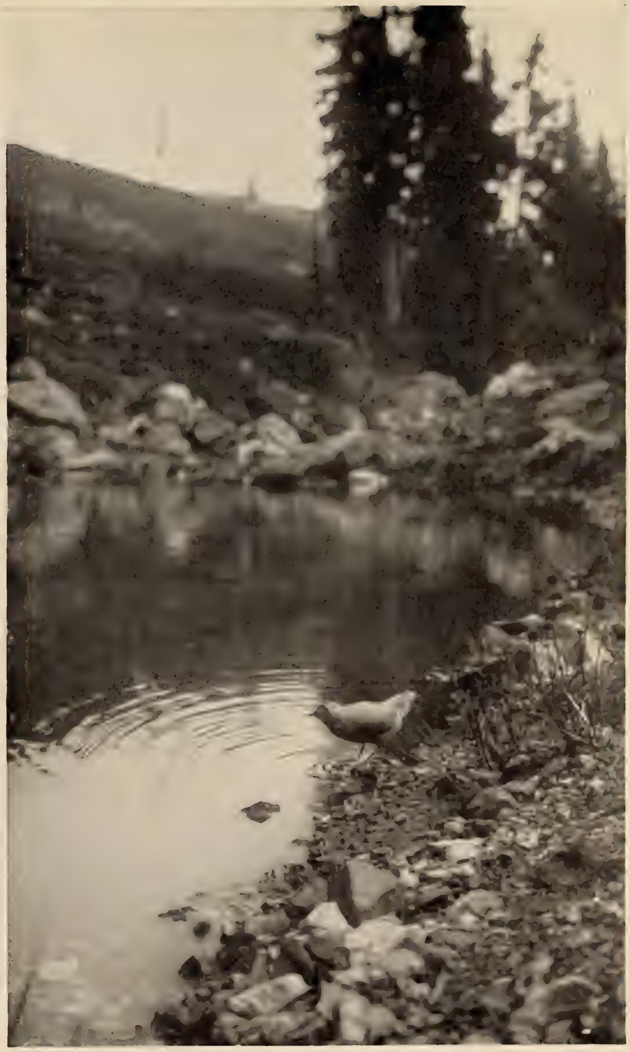
Our last camp, a mile above the Little Hetch-Hetchy, was made memorable by feeding to satiety the boys of our party, in whose improvident and ever-hungry eyes the commissary had seemed unnecessarily well-guarded and evenly apportioned. Now, with the end of the journey in sight, we could afford to be recklessly generous in the matter of hasty pudding and bacon. Now, too, we could fish to our heart's content in the sparkling river, could loiter that whole last beautiful day among the great pines and oaks and the young cedar forests, confident that but a few easy miles away a hearty welcome and a good commissary awaited us in the Sierra Club camp in Hetch-Hetchy.

A peculiar charm clings to the last days of an outing. Around the last camp-fires the climax of good-fellowship is reached; and in the day-long ramblings the freshness and beauty of the mountain life seem to gather new meaning as we approach the time when it must all be left behind. And so we love to linger by the way, coming late into camp, and tasting each day's pleasure to the full; for the mountain paths are many and the days of our pleasuring all too few,—and who knows when we shall pass this way again?

THE WATER-OUZEL.

By C. H. Sholes.

O blissful Sprite! enrapt of solitude,
  Elusive as the light, effect or cause
  Art thou of charms which make all human laws
And ties less dear to me than wildest wood?
Shy songster of the cañon's misty mood,
  Where sun and shade keep tryst with spray and pool,
  Where fragrant winds dip in and shift and brool,
And filter sunshine on thy tender brood,
Wouldst thou could put some magic in my blood
  To make me throb and thrill and sing like thee,
Out-rivaling e'en thy stream's impetuous flood,
  Thou Joy incarnate, woodland ecstasy!
What thou hast give me, O marvelous bird,
To sing my joys and sorrows in one word.



THE WATER-OUZEL.

Photograph by Gertrude Metcalfe, Mazama Outing, Mt. Baker, 1906.

To secure so fine a picture of the Ouzel in his native haunts is an achievement worth mentioning. The result exhibits that rare coincidence which might be striven for a thousand times without success. The bird has just alighted,—witness the numerous ripples in the water,—and his whole being is so alert with doubt, suspicion, and curiosity regarding the intruder, that one can almost see his wings quiver with indecision. A quarter of a second sooner or later, and the film would have spelled failure.

BIRD LIFE OF YOSEMITE PARK.

By Charles Keeler.

Amid all the splendor of deep-scored cliffs of granite, sculptured in domes and peaks and cathedral spires, of exuberant waterfalls and foaming rapids, hurrying with unceasing silver voicing to the level valley floor, where the green Merced meanders peacefully on past forests of spruce and pine, and meadows patined with variegated flowers,—amid all this sublime pageant of nature we must not overlook our little friends, the birds. They are all about us, in the swaying tips of lofty incense cedars, amid the sedges and daisies of the mountain meadows, upon the austere rocks of aspiring crags, and sporting in mid-air on tireless wings. Let us, in all friendliness, seek out a few of these happy choristers, that we may know one another when next we meet.

Early and late rings out the monotonous cadence of the robin's flute, sounding like a snatch of one of Schumann's arabesques. Who does not know the robin, with his prim air of opulency, his brisk hop, his hearty call? If you have never been introduced, by all means look him up. In size he comes between a sparrow and a dove, and his earth-red breast will reveal his identity. His back is slate-colored, the head and tail darkening to blackish; his throat is white, streaked with black, and the belly is plain white. We may even have the good luck to find his wife in the mud-plastered straw nest, setting upon her blue eggs or busy satisfying the wants of her clamoring brood. Her colors are duller than those of her gentle lord, but similar. When the young first put forth their feathers, they are speckled somewhat after the fashion of their near cousins, the thrushes.

Whether you will or no, you cannot escape acquaintance with the jays—the big crested blue-fronted jays that call and shout and make merry in the pines, that descend upon your camp with insolent nonchalance and help themselves to your stores without so much as by your leave, that flirt and quarrel with one another by turns, and fight with every other bird passer-by. They are gay and careless vagabonds, yet withal captivating with their very audacity. The fore part of the body is of a dark sooty brown color, the rear parts are dark blue, lit up by a brighter shade of blue on the black-barred wings and tail, and with streaks of blue on the blackish-brown head.

In striking contrast to these boisterous mad-cap camp followers, is that sedate exotic, the western tanager. The colors of the male are so gay that he can well afford the air of simple dignity which he assumes. You may know him at once by his canary yellow plumage splashed with red or crimson on the head and neck, by his black back, wings, and tail, and the two yellow bars on the wings. He is about the size of a large sparrow. A retiring frequenter of the forest leafage, he nevertheless comes into the open about camp and in his quiet splendor makes himself very much at home. His mate is soberly attired in olive greenish and yellowish. The characteristic abbreviated call-note of these birds may be heard in the valley at all hours of the day; the song less frequently.

Another faithful haunter of the camp and of all pleasant woodland nooks in the valley is the black-headed grosbeak. He is a sturdy, stocky, gaily bedecked sparrow, with thickened bill, as his name implies, and a musical though rather monotonous roundelay which is forever ringing through the pine boughs of a summer day. His black head is cleft by a median line of orange brown; he wears a buffy collar about the back of his neck; his back is black, and his black wings and tail are strikingly varied with markings of white. His rump and breast are of orange brown, the hue brightening to yellow on the belly and wing linings, so that altogether he is a well-marked individual and not to be mistaken. His mate is duller in tone, the black being replaced by mottled brown. As she leads her brood through the forest she calls them with a sweet crooning whistle which is one of the familiar notes of the midsummer-time.

Upon any sandy or gravelly bar of the river one may chance upon the only long-legged shore-bird or wader of the Yosemite—the spotted sandpiper. You may know him by his white breast spotted with brown, his brown back, his slender feet, his long bill and his habit of running about and poking into the sand for food. He is not to be confounded with that water-sprite of the boisterous mountain streams, the water-ouzel, that intrepid little stone-colored waif that runs into the rapids where they foam most madly, braces himself for a plunge and ducks under in search of his well-earned meal. The ouzel is a land bird that has taken to the water and become an adept in this most exciting kind of aquatic sport. He cannot be mistaken in his suit of gray for any other bird, for no other haunter of the rock-strewn rapids will coolly flit down into the icy water and disappear from view, bobbing up anon as serenely as if it were a matter of course to court death unceasingly in such seething, surging torrents.

On first arriving in the Yosemite, the majesty of the rocks so dominates the mind that one can scarce bring the attention down to anything so slight as a bird, but as the imagination becomes adjusted to the unaccustomed scope of nature, the pageant of wild flowers and the birds flitting about in forest and meadow give that humanizing touch of frailty and tenderness which is so entrancing in its contrast to the austere grandeur of the everlasting walls of granite. The tiny rufous and calliope humming-birds—the most diminutive of feathered forms—buzzing and darting amid manzanita and ceonothus bushes, full of the vim and zest of life compacted in such mites of bodies,—how the fancy roams from contemplating them as they flash in sparkling livery of iridescent green and coppery red and lilac to the awful cliffs toppling above their fairy bowers!

And then there are the little brown creepers—frail, slight, timid creatures with high lisping call notes—that cling to the pine trunks, busily hopping in spirals up the trees and prying daintily with their long slender beaks into the bark crevices for their insect food. Their backs of streaked brown and gray harmonize so closely with the tree-trunks that it requires a sharp eye to detect the tiny fellows as they continue their methodical and unceasing labor of food hunting. More noisy in their habits are those other creeping gnomes—the red-bellied nuthatches. Their characteristic iterated call-note once learned is an unmistakable evidence of their whereabouts. Their black caps, gray-blue backs and reddish-brown breasts, taken in connection with their diminutive size and their habit of clinging to the trunks of trees instead of alighting on branches, will serve to make them known even to the novice in bird-craft.

With these amateur bark-pryers we may contrast the masters of this mode of life—the woodpeckers. Structurally widely sundered, the similarity of their habits brings these two groups together in mind, but the woodpeckers, with their toes paired, two forward and two backward, their stiff tail props, their slender wiry necks, and their stout beaks, are set apart as the bark dwellers *par excellence.* The California woodpecker, one of the most showy members of his tribe, has a black back, burnished with bluish luster and a white rump-patch. The top of the head is crimson with a white border on the forehead; the chin and breast are black, with a white or sulphur-yellow throat area between, and the white belly is streaked on the sides with black. The harsh rattling call-note of this bird—*ka-rak-a, ka-rak-a, ka-rak-a,* is unlike any other bird-sound in the Sierra, and thus affords a ready means of identification. Both the California and Harris's woodpecker beat a resonant tattoo upon the tree trunks, but the short abrupt squeak of the latter bird serves to distinguish it even at a distance. The black back of Harris's woodpecker is interrupted by a broad white streak, and the male has a dash of scarlet on the head. The under parts are plain grayish white.

But by all odds, the most unusual of the woodpeckers in appearance is the familiar and widely distributed red-shafted flicker. A big easy-going fellow is the flicker, marked by the bright red shafts of the wing and tail feathers, the white rump, the black breast crescent, the scarlet mustache streaks (of the male only). The general color of the body is a pale brownish pink, barred with black above, and with round black dots on the under parts. The flicker has a great variety of call notes, loud, striking and easily recognized when once learned.

I need but allude to the so-called game birds which happily here enjoy perpetual immunity from human persecution. An occasional mallard duck may be seen swimming on the glassy waters of Mirror Lake, giving a touch of life to the otherwise unearthly splendor of this little pond, upon whose surface is imaged such a pageant of granite cliffs and sky-searching peaks. Flocks of band-tailed pigeons, with their deep cooing call notes, are common in the valley, the trees beside the Merced being favorite roosting places. Mountain quail are to be found in the chaparral, the long sweeping head plume and chestnut hue on throat and sides marking them at once. In the spruce and pine trees on the summit of the cliffs about Yosemite, the sooty grouse, a big blackish brown hen-like bird, sounds its strange muffled booming.

I cannot recall those sugar-pines and silver fir forests that crown the Yosemite heights without a thrill of delight. Here the poor-will utters its strange call through the night-time and the mountain chickadees lisp and chatter merrily by day. The chickadees, those social care-free happy-go-lucky spendthrifts of the pines, in their suits of gray, set off with head and throat markings of black—how they enliven the somber forest solitudes with their merry ways! And their more splendid cousins, the ruby-crowned kinglets, are there also! Veritable little kings, with scarlet crowns, olive-green backs, and gray breasts—tiny forest sprites, flitting ever from spray to spray in quest of insect food, or pausing now and again to sing their lovely song.

And those enchanting mountain meadows, tenanted by blue larkspurs and purple daisies and golden mimulus, where the streaked brown song-sparrow sings as in the valleys at home, and the summer warbler in golden livery utters its joyous lilt! Lovely violet-green swallows are cleaving the air or skimming over the streams, the tanager's *twitch up* sounds from the nearby forest, the robin warbles, and the hermit thrush utters its far-away ethereal strains. Ah, the hermit thrush,—soberly attired in olive brown above, brightening to reddish brown on wings and tail, and pale buffy below, spotted with brown,—how its witchery of unearthly tones lingers in the mind, bringing back as by an enchanter's spell, all the delight of the mountain solitudes, the fragrance of the pines, the wonder of leagues of serrated snow-mantled crags, the awful gorge with the peaceful green floor at foot of those stern rock walls!

Only upon the summit of Cloud's Rest or the higher peaks beyond is that droll hob-goblin of a bird, Clark's crow, to be found. In size about that of a chunky jay, the nut-cracker, as he is called, is one of the most absurd and amusing of all our birds. Fancy him all in gray, with black wings white banded, and white tail with the central feathers black, with long sharp beak, a veritable gray friar on a frolic! Why he chooses to live on such bleak storm-swept heights, where few other birds save the arctic pink-and-chocolate leucostites venture, is more than I can guess. He is a sociable roustabout, and always finds himself in jovial company. A flock of these birds, tame, saucy, irresistible in their antics, hopping over the rocks with head now on one side, now on the other, with their queer hoarse calls and general airs of proprietorship and curiosity, will claim the attention of the most casual observer, even though spread out about him stretch measureless leagues of tortured mountain ranges, of bewildering gulfs of granite, of somber forests of pine, and wastes of snow.

The sheer cliff walls of the Yosemite are the breeding-place of flocks of those peerless aerial voyagers, the white-throated swifts. They are first cousins of the familiar chimney swallow, so called, of the Eastern States, and are more or less related to groups as widely different in habits and appearance as the whip-poor-wills and humming-birds. In coloration the white-throated swift is as unpretentious as the nut-cracker, its upper parts being blackish brown, and its under parts white. The under-tail coverts are dark, however, and the wings are varied, with white patches. The extraordinary thing about the swift is its impetuous flight, its endless rush through the air on rapidly vibrating wings, the velocity of its darting hither and thither after insect prey. As we look up at the dizzy heights of the vertical parapets of granite, we may descry a flock of these accomplished aeronauts, sporting high aloft as care-free as a crowd of children at play, and catch the incessant chattering calls floating down to us as from another world. Their nests are built of sticks, gummed to the cliff walls with their saliva, so their babies are born cliff-dwellers and fledged upon the heights of fear.

In the Yosemite Valley the cliffs rise so abruptly that birds of the Alpine Zone are brought into more intimate relationship with the characteristic forms of lower levels. It is so easy for birds to fly down from the rim of the gorge to that entrancing valley where they may disport beside the still water in meadows green. Thus the junco or snow-bird (Thurber's junco the books call it) is to be expected at a higher level than the floor of the valley, but cannot resist the temptation to stray into this paradise. The junco is a member of that large group, the finch family, in which we have already encountered the variegated grosbeak and the streaked song sparrow. But the junco is soberly attired in Quaker gray, turning to brownish on the back; the head and neck black, sharply contrasting on the breast with the white of the under parts. The white outer tail feathers are also a mark of identification for this species, and may always be noticed as the bird takes wing. The junco is a sociable little fellow and may generally be found in company of his own kind.

One of the most familiar and friendly of the humbler birds about our camp was the chipping sparrow. He has a bright reddish-brown patch on his head, contrasting with the blackish forehead. His back is brown, streaked with gray and black and his breast plain ashy gray. His song is a long sustained trill, without variety, but withal the chippy is such a simple confiding little creature that you forgive him for his lack of brilliancy or splendor.

The reddish brown crown-patch and black forehead of the chipping sparrow would not serve as an infallible mark of identification, for another much less common, and therefore, I suppose, more interesting sparrow of the Yosemite is similarly colored. I refer to the green-tailed towhee, which is quite unlike the demure little camp-follower we have been observing, in that its back is olive-green and its throat pure white, bordered with dark stripes. Its breast, however, is ashy gray, like the chipping sparrows. An inhabitant of the low shrubbery, it has a sweet and varied song, which may baffle the tyro in bird lore on account of the retiring habits of the minstrel.

Then there is the gay lazuli bunting, a care-free prince of the underbrush, a little sparrow decked out in brilliant azure, with the breast ruddy brown in contrast, a tireless songster, flitting amid the azaleas and ceonothus and enlivening the groves both with its brilliant livery and its animated roundelay. And in the pine trees carols another gay sparrow, the California purple finch—a lovely songster with head and throat of a bright rosy-red hue, this shade extending more or less down the brown-streaked back. The females of both these brightly bedecked finches are appropriately attired in modest brown, rendering them less conspicuous in their tender care of their nestlings.

We have already had a glimpse of the golden summer-warbler, but there are other members of this family haunting the leafage. Unlike the sparrows, with their stout conical beaks for crushing seeds, the warblers have fine slender bills for picking insects off the leaves of the forest trees. They are for the most part shy, restless, dainty sprites of the woodland solitudes, and fortunate is the bird hunter who makes their acquaintance.

One of the most beautiful of this group is the exquisite creature unhappily named the pileolated warbler. Let us call him by the less pedantic name of black cap, for his jetty crown contrasting with the bright gold of his forehead marks him at once. The back is bright olive-green and the under parts clear brilliant yellow. The female lacks the black cap of her mate, but is otherwise similarly colored. Fortunate may we consider ourselves if we catch even a glimpse of the shy hermit warbler, with its bright yellow head, its gray, black-streaked back and white under parts. But Audubon's warbler is a friendly and familiar nester in the pines, and may be known by the patches of yellow on crown, throat, rump, and sides. The back is slaty blue, streaked with black, the breast is black, and the belly white. The black wings and tail are conspicuously marked with white, so that altogether a full-plumaged male of this species is strikingly attired. The female has all the colors subdued, the under parts with more of white, and the slaty blue above replaced by brownish.

Closely related to the warblers are the vireos. The most abundant species of this group is the warbling vireo, a plainly attired yet dainty mannered little aristocrat in olive gray coat brightening to olive green on the rump. The breast is dull white and the sides have barely a tinge of yellow. The loud sweet carol of this humble minstrel is a feature of the bird choir in the Yosemite, yet the singer seems so busy in his quiet way at gleaning the leaves for food that we wonder he can pause to utter his delightful song.

Despite their plain colors and prosaic manners, we must not overlook the flycatchers,—little fellows with wide snapping beaks, weak feet, and very limited *pee wit* calls. The commonest species is the Western wood pewee, with olive brown back and white under parts, faintly tinged with yellow.

But we cannot expect to make acquaintance with all the birds of the Sierra wilds at one sitting. Patience and loving kindness are the watchwords for those who would be initiated in nature lore. When next you go to the Yosemite you will find the majestic splendor of Titan cliffs and crags humanized and brought closer to your heart by meeting there a host of glad-voiced friends, familiar habitants of this wonder-vale, children of the air and the forests, who will sing to you each his own love song—tender, wild, and shy. And above them all you will listen to the evening hymn of the thrush—not the ethereal hermit of the heights, but the russet-backed thrush of the valleys chanting his soulful and wistful melodies as the purple shadows of the cliffs darken across that valley of enchantment. Then as the pale stars brighten and the dark violet sky deepens to the dusk of night, as the last flutter of joyous wings is stilled, you may think of ten thousand mothers fondly brooding over their swinging cradles in the pines as the night wind croons them a lullaby, each with her little lover close beside her, trustfully sleeping in all that wilderness and taking no thought of the fears of the morrow. Ah little mothers of the pines, you and your blessed mates are the world's most eloquent teachers for those who will but go to you and look and listen, for you are forever preaching the eternal gospel of love.

AN EASTERNER'S IMPRESSIONS OF A SIERRA CLUB OUTING.

By Francis M. Fultz.

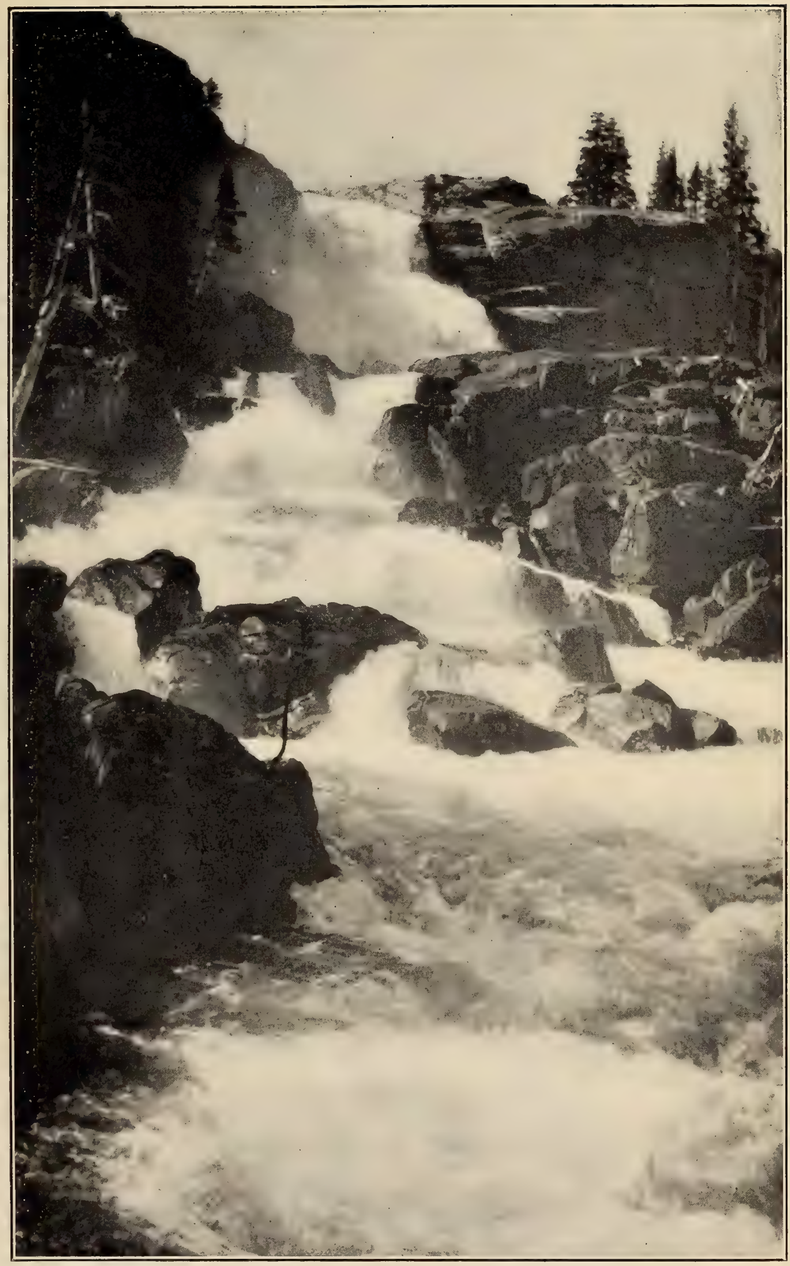
As a newcomer I had great curiosity to know what manner of folk the Outing Party would be composed of. Would they be a sociable lot? Would they welcome a stranger who had come a couple of thousand miles to thrust himself among them? Would they be mostly pedagogues (I am one myself, although you might never know it) who were going out to catalogue the flowers and trees, to chase butterflies, and to stalk glaciers to their lairs? Or would they be business people who were running off to the mountains where telegrams and demands for overdue orders could not reach them? Would they all be fishermen? (I work at the business some myself, and I did n't like to think of there being one hundred and forty-nine others intensely interested in the same line of sport. I thought perhaps there might not be enough trout to go 'round.) Would there be many women in the crowd (*there were*), and how independent of help would they be? These and a thousand other questions thrust themselves upon me, and left me in a state of great expectancy. A month with the Outing Party answered all the questions, quieted my curiosity, and left me immensely satisfied.

I found the party made up of sociable people who fell naturally into the unconventionalities of camp life, and who met one with that frank and hearty manner that makes getting acquainted easy, and that causes one to feel that one's friendship is considered a favor. Everybody was ready to get acquainted with everybody else, and eager to add in every possible way to the pleasure of the Outing. This was especially true of those who were older members of the Club, and who had been on previous Outings. Their knowledge of camp life and practices, as well as acquaintanceship with the region, was of much service to the new members, and was freely offered at all times. I gratefully remember advice and information that thus came to me, and which saved me unnecessary pain and hardship.

I was impressed with the orderliness and lack of confusion with which the Outing was conducted. It is no small task to provide during a whole month for one hundred and fifty people, part of the time on the march and the remainder of the time in camp in the mountains at a distance from the base of supplies and where everything has to be transported by pack-train. Yet the commissary was well supplied at all times and there was but little delay in bringing forward the baggage.

I was pleased beyond expression at the opportunities offered to see the region. I was somewhat surprised, too, at the number who came to see. Personally I had expected to do considerable "hiking" and to attempt some climbing of mountains. But I did not expect to see a party of some sixty or seventy stringing out over the snow-fields and climbing the passes at eleven thousand feet, as happened on the Merced trip. I saw much more of the High Sierra than I thought was possible in the time allotted, a result only attributable to the previous careful planning of the Outing.

The memories of the knapsack trips are imperishable. I shall ever see the basin of the Upper Merced, lying white in the moonlight, and the falls of Foerster Creek, breaking into showers of silver beads; and the vision of Ritter, guarded on one flank by Banner Mountain and on the other by the Minarets, as we saw them that first time when we reached the ridge at Foerster Mountain, will ever rise to greet me! And the roar of the Tuolumne I shall still hear when the memories of other sounds shall fail! And then the comradeship, begotten by the close association, where it was the first thought of every one to be of service to everybody else, where every one



FALLS AT THE HEAD OF TUOLUMNE CAÑON.

Copyright, 1908, by F. M. Fultz.

helped, and where every one wanted to do more than his own share of the work! It is all unforgettable!

The camp-fire was an interesting and enjoyable occasion. The nightly gathering in the log amphitheater around the blazing fire to hear the announcement of plans for the morrow, or to listen to story and song, was looked forward to with anticipation and pleasure. And when we were all gathered in, and the great square of illuminated faces appeared against the black background of the forest, what a unique spectacle was presented!

And such opportunities as there were for studying the flora, fauna, and physiography of the region. The specialists could easily be forgiven the zeal with which they pursued their special lines of research, and should not be blamed that their enthusiasm became contagious and infected the party so universally that tree-lore, glacier-movements, and Nature's secrets generally threatened to become the commonest kind of knowledge.

A host of other things press forward for recognition: The Yosemite, the Hoffman and Dana trips, the Mono region, Tuolumne Meadows, the Hetch-Hetchy, the trout-fishing, and so on through a long list, each one adding its quota to make the month an eventful period, unexcelled in mountain experience. But I refrain from continuing, lest I tire the reader through my effusiveness.

May we all meet again,
Where mountain, forest, waterfall, and glen
Of the Sierra call us from the strife
Of business and the petty cares of life,
Far from the noisy, restless haunts of men,—
May we all meet again!

Burlington, Iowa, November 27, 1907.

INDIAN PICTOGRAPHS IN PATE VALLEY.

By E. W. Harnden.

These Indian pictographs were found on the 1907 Sierra Club Outing by Mr. McKibben and myself on the northern side of Pate Valley, midway in the Tuolumne Cañon. No. 1 is taken from a point about ten minutes in from the Tuolumne River, following Piute Creek and reaching the edge of the inner meadow, looking north. The inscriptions were found on face of cliff rising from meadow, at left of picture, west of some large oaks, the cliff fronting east of southeast. The markings were incised, probably with obsidian, fragments of which were lying about, and were colored with a red ochre or pigment. While the designs seemed to stand out boldly in but a few places, examination showed that they had probably been worked into the cliff for one hundred feet or more, from the ground to a height of ten or twelve feet, but had been in many places almost or entirely obliterated by weathering or scaling of the granite face. They appeared to be quite old.

At about the middle of the inscribed face was a shallow, somewhat irregular chamber in the rock, seeming to follow lines of cleavage with side recesses where one could retire or conceal himself from view—perhaps a partly natural cave, added to and amplified by man.

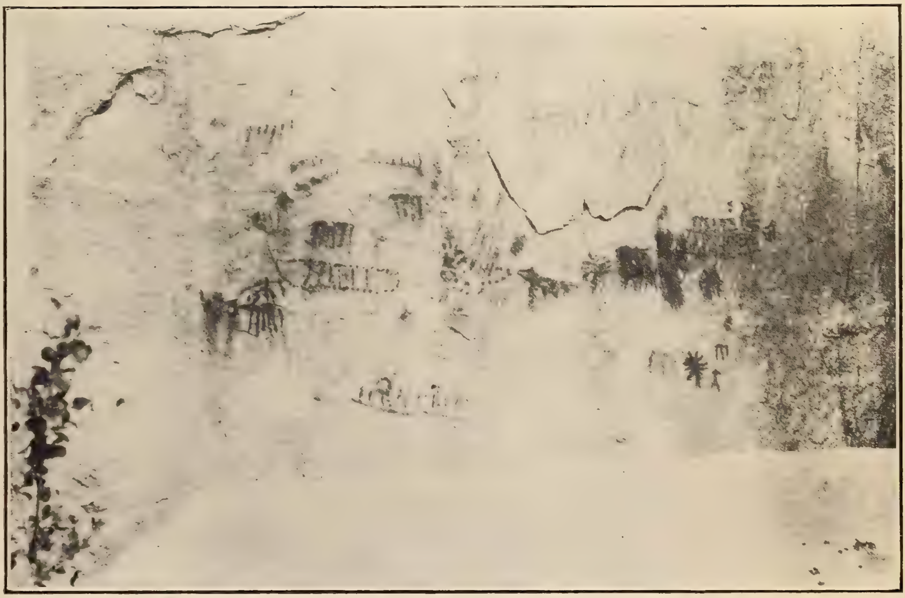
In a horizontal rock in front of the cave was sunken a mortar hole several inches in diameter, and close by was a stone pestle fourteen or fifteen inches long, which seemed slightly stained on the end—either from weathering or because it was used in grinding color.

The markings in No. 2 are to the left of the cave, near the ground.

The markings in No. 3 are to the right of the cave.

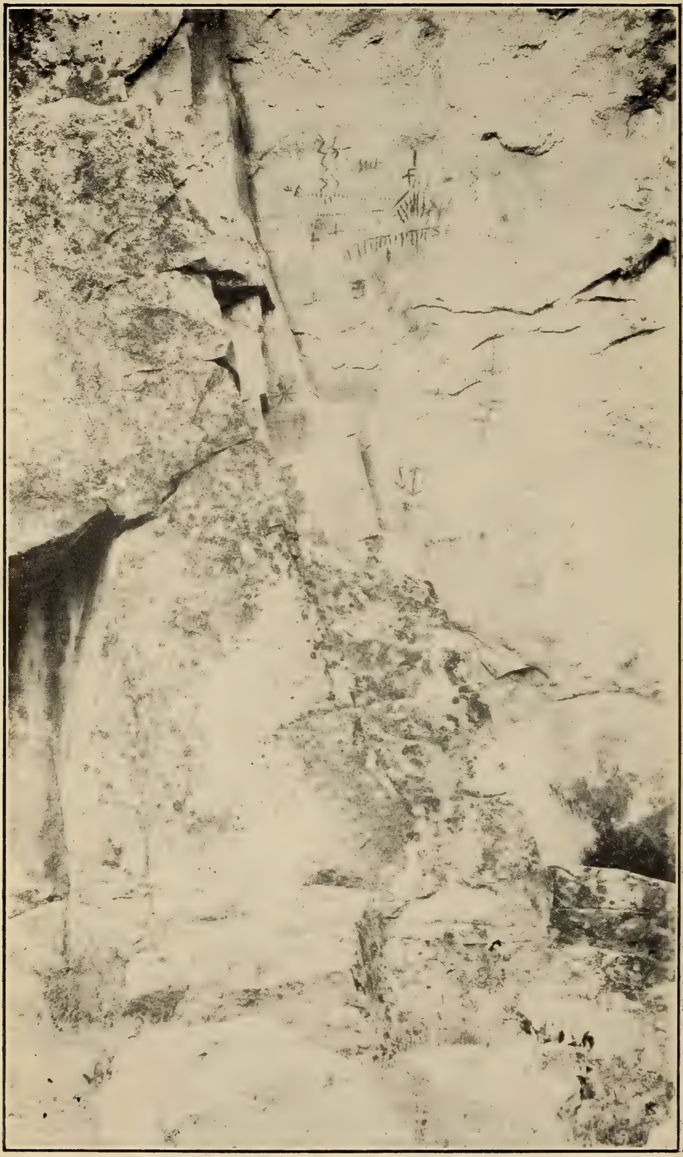
Boston.

INDIAN CLIFF, PATE VALLEY.



INDIAN PICTOGRAPHS, PATE VALLEY.

From photographs by E. W. Harnden, 1907.



INDIAN PICTOGRAPHS, PATE VALLEY.

From photograph by E. W. Harnden, 1907.

[The modest notes by the discoverers of these interesting ethnological records hardly indicate the importance of the find. None has heretofore been found in either the Tuolumne or Merced drainage areas; so that this discovery establishes a new northern limit for these pictorial writings. An authority on anthropology, who has seen these photographs, writes concerning them as follows:

"Nothing can be told you of the significance of the characters contained. Such markings are found pretty well over the southern part of the State. In no case do the present Indians know their origin or meaning. In some cases at least they have myths about them,—that they were made by supernatural beings. Fog-maiden was thought to have made one such set of marks. The Indians of this region do not make representations of natural objects as do the Indians of the Plains. In my opinion, the explanation of them, if they are in any way significant, is likely to be connected with some important enumeration or calendar-keeping. Some attempts have been made to explain them as the results of implement-making. The easy way out is to call such things ceremonial, but the chances are that the ceremonial use is secondary, resulting from a loss of practical use or significance."—EDITOR.]

SIERRA CLUB BULLETIN.

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Published for Members. Annual Dues, $3.00.

The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

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REPORTS.

REPORT OF THE OUTING COMMITTEE.

The Outing of 1907 stands out as the most successful the Club has ever undertaken. The executive details, including the transportation and pack-train problems, and the management of the commissary, were as nearly perfect as it is possible to make them. The glorious scenery—including, as it did, the peerless Yosemite Valley, the emerald, flower-enameled Tuolumne Meadows, encircled by picturesque groups of snow-clad peaks, and the beautiful gem-like Hetch-Hetchy Valley,—made a trip that cannot be excelled anywhere in the world. The entire party of one hundred and fifty was complete some time before the date of departure. A side trip to the wonderful Merced Cañon region with its two mountain gems, lakes Merced and Washburn, was taken by more than one half the entire party.

A knapsack party of fifteen left the camp in Merced Cañon, and, crossing the North Fork of the San Joaquin River, climbed Mt. Ritter from the west. Another party of five had climbed the mountain from the east only a day or two previous. Many members of the main outing party climbed Mts. Lyell, Dana, and Hoffman, and crossed the crest of the Sierra, descending to Lake Mono and the vicinity of the volcanic craters. The great fall of snow and the lateness of the season made the mountains more than ordinarily picturesque; and all the waterfalls were in their prime. Two knapsack parties, numbering twenty-eight in all, made the famous trip from the Tuolumne Meadows down to Hetch-Hetchy Valley, where they rejoined the main party.

The completion of the Yosemite Valley Railroad to El Portal, only a short distance from the lower end of the valley, eliminated the long, tiresome stage ride, and it is now an easy matter to visit either the Tuolumne Meadows or Hetch-Hetchy Valley, compared with the difficulties presented by these trips in the past.

The members of the party were unusually congenial, and the spirit manifested throughout the entire Outing was splendid. We had the rare pleasure of John Muir's companionship during the earlier days of the Outing.

The trip was singularly free from accidents, as have been all of the Annual Outings. The only occurrence that tended to detract from the care-free joy of the party was the sad death of Mr. Arthur D. Smith in Yosemite Valley, after he had left the main camp in the Tuolumne Meadows. Under the circumstances, there was nothing the Club could have done to have prevented this, for every member of the party would gladly have done everything in his power in the way of rendering assistance, had Mr. Smith's condition been known. The Club has lost one of its most genial members, who was beloved and respected by all who knew him.

In spite of the heavy expense of hiring a large pack-train, which was continuously at the disposal of the party, a sufficient balance was left to provide for the preliminary expenses of the coming Outing.

The plans and preparations for the 1908 Outing are rapidly progressing. We expect the coming summer's Outing to be as nearly perfect as past experience in transportation and commissary problems can make it. We will visit the Kern Cañon and lakes, via Porterville and Springville—climb the Kaweahs and Mts. Whitney (the highest mountain in the United States proper), Tyndall, and Williamson; explore the Big Arroyo and Kern Kaweah, returning to the Giant Forest via Alta Meadows. The trout fishing will be the best in the world, the camping unsurpassed, and the scenery a source of joy for artists or mountain lovers. The interest already shown in this trip indicates that it will be one of the most delightful yet undertaken. Complete information concerning it will be contained in the Outing Announcement to be issued shortly.

Respectfully submitted,

Wm. E. Colby, *Chairman,*
J. N. Le Conte,
E. T. Parsons,
Outing Committee.

To the Honorable Secretary of the Interior,
Washington, D. C.

Sir: The Sierra Club begs to submit the following suggestions as to road-building and other needed improvements in Yosemite National Park:—

I. That a general plan for the treatment of the floor of Yosemite Valley be made by a competent landscape artist and carried out under his supervision, at a cost of about one hundred and fifty thousand dollars. This would include the thinning and clearing of undergrowth jungles; the building of a permanent system of roads located with reference to scenery, esthetic effects, etc., instead of the present haphazard dust, sand, and mud ruts called roads; and the restoration of the down-trodden herbaceous vegetation to something like the beauty of wildness, etc.

II. That a road be built into Hetch-Hetchy Valley connecting with the present wagon-road which now terminates at a distance of about nine miles from the lower end of the valley. Government engineers have estimated that the cost of such a road would be about fifteen thousand dollars. Next to Yosemite itself, Hetch-Hetchy is the greatest attraction in the park, and will be visited by countless thousands when once made easily accessible.

III. That all private holdings within the park be extinguished by purchase or condemnation. Perhaps the most important of these is the old Tioga Road, which follows up the main dividing ridge between the Tuolumne and Merced rivers into the Tuolumne Meadows, thus opening the central part of the park to tourist travel. It was built by a mining company, but has long been out of repair. It could probably be purchased and put in good condition for much less than the original cost.

IV. That a trail be built from Yosemite Valley leading directly up the cañon of the Merced River to its headwaters, thence into the Tuolumne Meadows and down the Grand Cañon of the Tuolumne to the Hetch-Hetchy Valley. The cost would be considerable, but it would be justified over and over again by bringing to view the most sublime and beautiful cañon scenery of the Sierra or the world.

V. A trail built directly up the Tenaya Cañon from Yosemite Valley to Lake Tenaya would enable travelers to reach the eastern portion of the park much more directly and earlier in the year. While a great deal of blasting will be required, this trail could probably be built for fifteen thousand dollars.

It will require an appropriation of at least two hundred and fifty thousand dollars to effect the improvements suggested, and we respectfully urge that such an appropriation be made.

Respectfully submitted,
(Signed:) JOHN MUIR, *President,*
WM. E. COLBY, *Secretary,*
J. N. LE CONTE, *Treasurer,*
WM. F. BADÈ,
E. T. PARSONS,
Committee of Board of Directors of the Sierra Club on Welfare and Improvement of the Yosemite National Park.

THE HETCH-HETCHY WATER PROJECT.

San Francisco, September 20, 1907.

REPORT OF THE SIERRA CLUB COMMITTEE APPOINTED BY THE PRESIDENT AT A MEETING OF THE DIRECTORS HELD IN SAN FRANCISCO AUGUST 31, 1907.

Whereas, The Yosemite National Park was created by an act of Congress, October 8, 1890, in order that the unrivaled aggregation of scenic features of this great natural wonderland should be preserved in pure wildness for all time for the benefit of the entire nation; and

Whereas, An application has been made to this department by certain local interests to utilize Hetch-Hetchy Valley as a reservoir site for the purpose of obtaining a municipal water-supply for the city of San Francisco, and thus flooding the entire floor of the valley;

Whereas, Hetch-Hetchy Valley, far from being "a common meadow," "a minor feature," as claimed by applicants, is a counterpart of Yosemite and a great and wonderful feature of the Park, next to Yosemite in beauty, grandeur, and importance;

Whereas, The floor of Hetch-Hetchy, like that of Yosemite, is a beautiful landscape park diversified by magnificent groves, gardens, and flowery meadows in charming combinations specially adapted for pleasure-camping; and

Whereas, This wonderful valley is the focus of pleasure-travel in the large surrounding area of the Park, and all the trails from both the south and the north lead into and through this magnificent campground, and though now accessible only by trails, it is visited by large numbers of campers and travelers every summer, and after a wagon-road has been made into it, and its wonders become better known, it will be visited by countless thousands of admiring travelers from all parts of the world;

Whereas, If dammed and submerged one hundred and seventy-five feet deep, as proposed, Hetch-Hetchy would be rendered utterly inaccessible for travel, since no road could be built around the borders of the reservoir without tunneling through solid granite cliffs; and

Whereas, These campgrounds would be destroyed and access to other important places to the north and south of the valley interfered with, and the High Sierra gateway of the sublime Tuolumne Cañon leading up to the grand Central Campground of the Upper Tuolumne Valley would be completely blocked and closed; and

WHEREAS, No greater damage could be done to the great National Park, excepting the damming of Yosemite itself; and

WHEREAS, All of the arguments advanced in favor of making Hetch-Hetchy into a reservoir could be made to apply with equal force to the case of making Yosemite into a reservoir, except that the cost of a dam in the latter case would be greater;

WHEREAS, Such use would, to a great extent, defeat the purpose and nullify the effect of the law creating the Park; and

WHEREAS, The proponents of the San Francisco water scheme desire the use of Hetch-Hetchy, not because water as pure and abundant cannot be obtained elsewhere, but because, as they themselves admit, the cost would be less; and

WHEREAS, We do not believe that the vital interests of the nation at large should be sacrificed and so important a part of its National Park destroyed to save a few dollars for local interests; therefore, be it

Resolved, That we are opposed to the use of Hetch-Hetchy Valley as a reservoir site, and devoutly pray that the application of the San Francisco Board of Supervisors to the Honorable Secretary of the Interior may be denied.

(Signed:) JOHN MUIR, *President,*
WILLIAM E. COLBY, *Secretary,*
J. N. LE CONTE, *Treasurer,*
WM. F. BADÈ,
E. T. PARSONS,
Directors of the Sierra Club.

THE HONORABLE SECRETARY OF THE INTERIOR.
Respectfully submitted.

TO THE EDITOR OF THE SIERRA CLUB BULLETIN.

Dear Sir: A careful canvass discloses that the members of the Sierra Club are almost unanimously opposed to the utilization of Hetch-Hetchy Valley as a reservoir for supplying water to San Francisco. There are a few, however, who hold contrary opinions, and it is only just to these that the reasons, which induced the Committee of the Board of Directors to take the strong stand which they have in opposition to the project, be briefly outlined.

The reserving of the Yosemite National Park was no fortuitous circumstance done without object or reason. It was created because of the wonderful aggregation of natural scenic features existing within its borders "which the Congress of the United States sought by law to preserve for all coming time as nearly as practicable in the condition fashioned by the hand of the

Creator—a worthy object of national pride and a source of healthful pleasure and rest for the thousands of people who may annually sojourn there." John Muir and some of his interested friends started the movement which resulted in this dedication by Congress to the people of the nation. What right, then, has any local community to step in and say, "This water supply and system have been carefully preserved all these years for the benefit of the public, while other available systems have passed into private hands—it will be cheaper to enter this public park and appropriate that which is not privately owned—only because it has been devoted to a public use?" We answer without equivocation, it has no such right where there are other sources of supply available, even if to obtain them will mean increased cost.

That there are other available sources of supply is a fact well established by engineers of great authority, and is admitted by some of the foremost exponents of the Hetch-Hetchy project. It is absurd to maintain that the run-off from the great roof of the Sierra is confined to the Tuolumne watershed. Mr. Marsden Manson's isohyetal lines clearly establish that the annual rainfall increases materially as we go north of the Tuolumne on the Sierra slopes.

Professor C. D. Marx, of Stanford University, in his opening paper read before the Commonwealth Club when the subject of a water supply for San Francisco was being discussed, stated that "It can readily be shown that the drainage area needed for a water supply capable of furnishing 200,000,000 gallons per day can be had on a number of the Sierra streams. . . . That the drainage areas of streams north of the Tuolumne give better promise of meeting these requirements, cannot be denied. . . . It cannot be said that the physical data now available are such as to admit of a reliable comparison of the relative values of the various sources of water supply for San Francisco from the Sierras."

Colonel Mendell, an eminent engineer and authority on water supply systems, prepared an elaborate report on this subject many years ago, and pointed out many available sources from which water for a San Francisco supply could be obtained.

There are several streams north of the Tuolumne, the waters of which analysis shows to be as pure. The storage capacity on some is adequate. The main objection urged is that it will be more expensive to acquire the private rights which exist. In this connection it must be kept in mind that nearly the entire floor of Hetch-Hetchy Valley is held in private ownership, and will have to be purchased or condemned; that there is an association of persons in San Jose who claim to have rights superior to the city of San Francisco; and, finally, that one of the most powerful organizations of irrigationists to be found anywhere in the areas occupied by any of the available systems is prepared to maintain its rights on the Tuolumne by "fighting to the last ditch."

Water is much more necessary for irrigation within the range of the Tuolumne than it is on the streams further north. The lands in the vicinity of Turlock and Modesto cannot be irrigated unless the water comes from the Tuolumne, while a municipal supply can be secured elsewhere.

The combined flow of Cherry River and Eleanor Creek, with the ample storage facilities on both these streams, is a possible system. The Stanislaus River watershed presents another, and a power company now constructing its system there will shortly be ready to deliver water ample in quantity and equal in purity to that of the Tuolumne. The Mokelumne watershed is also a possible source, as is the Bay Cities system on the Cosumnes and American rivers. The Snow Mountain Power Company, operating on the Eel River, claims that it can deliver water to San Francisco much cheaper than from any other source, including the Hetch-Hetchy. There are other available sources, but I have mentioned enough to indicate that there are many, and careful investigation will doubtless disclose that some one of them may be found as cheap, if not actually less expensive, than would be the cost of the Hetch-Hetchy system.

So much for the question of the necessity of using Hetch-Hetchy. Let us consider for a moment the effect of using the valley for the purpose proposed.

Some people contend that the destruction of the beautiful meadows and groves of Hetch-Hetchy Valley, and the alteration of this natural setting by the creation of a reservoir with its unsightly margin and exposed flats, as will occur in late summer at time of low water, will enhance the beauty of the valley. We do not agree with these zealous enthusiasts, but, be that as it may, it does not answer the fact that Hetch-Hetchy Valley will be rendered less accessible—that camping and living on the floor of the valley will be rendered impossible—and how else can one enjoy to the full its wonderful beauties, which our artist Keith says are, in some respects, even superior to Yosemite? We might as well dam Yosemite to enhance its scenic attractions! Such arguments as these are mere sophistry.

Everyone is not aware of the fact, but it is true that even the Tuolumne Meadows has been included in the proposed reservoir system. It would probably not be necessary to utilize this site for some time, but it will follow as surely as "the night follows the day" that if the precedent of using Hetch-Hetchy Valley for a reservoir is established, sooner or later the Tuolumne Meadows will be demanded for the same purpose. The invasion of national parks for local reasons is a most dangerous proposition, especially in the absence of a compelling necessity.

If Hetch-Hetchy is to become a source of water supply for San Francisco, it is certain to follow that serious objection will be made to the increase of travel and camping in the park on the headwaters of the Tuolumne. The day is coming when thouands will annually frequent these meadows and the headwaters of the Tuolumne River, and hotels will necessarily be constructed for their accommodation. There will be serious opposition to this proper use of the park on the ground that it will pollute the water supply. All of the streams of other available systems head in forest reserves, and it is beyond question that those sources of supply will be less liable to contamination from an increase of population than will the proposed Hetch-Hetchy system.

The Yosemite National Park means much for the future welfare of California. In time to come the visitors within its borders will number hundreds of thousands, for its attractions are unrivalled in the whole world.

The attitude of the Committee of the Board of Directors is that, since there are other adequate sources of water supply available for San Francisco, it is only just to the nation at large, which is vitally interested in preserving the wonders of the Yosemite National Park, that their destruction or alteration should be avoided if it is possible to do so, as it most certainly is when the question resolves itself into one of mere expense.

Very truly,

WM. E. COLBY.

REPORT OF THE LE CONTE MEMORIAL LODGE COMMITTEE.

During the summer of 1907 the Committee carefully inspected the Lodge with the Custodian, and after consideration recommends that steps for its repair should be taken promptly. The roof in places leaks; the granite stones of which the steps are made are in places loosening; the porch has on it a quantity of loose gravel, which rolls down the steps, making it dangerous to go in or out, especially at night, there being no porch-light; in the chimney and other parts of the building cracks are showing in the cement; and the growing library of books and maps requires some mould-proof and rat-proof receptacle for the winter months. There is no water in the building, and in case of fire there would be no possibility of saving the structure. A moderate outlay will correct these defects, and the building is otherwise unimpaired.

Upon due authorization the Committee will take necessary action on the foregoing.

The furniture of the Lodge is inadequate and not of fitting style. One of our esteemed members has subscribed one hundred dollars toward a fund for the refurnishing of the Lodge, and further subscriptions to this refurnishing fund are solicited. The Committee believes that two hundred and fifty or three hundred dollars would suitably furnish the Lodge in a substantial manner.

The library is growing, but many books are needed to cover the territory of the High Sierra and give information called for by visitors. From the subjoined list of books now in the library its lacks can be noted, and donations of suitable books are requested from members and friends. The growing interest in the Lodge and its increasing significance is shown by the great registration of visitors for the past season.

The Committee takes pleasure in including in its report the following from the Custodian for the season of 1907:—

To the Le Conte Memorial Lodge Committee.

The Le Conte Memorial Lodge first opened for the season of 1907 on May 28th, and almost before the door swung back on its hinges there were people ready to partake of the Sierra Club's friendliness. The building was open daily, except Sunday, from 9 A. M. to 9 P. M., and during the entire time of two and one half months it was well patronized by the friends of the Club. In the months of June and July the Camera Club (in two sections), the Sierra Club and its Eastern friends, also excursions of teachers from the N. E. A. Convention in Los Angeles, besides the usual amount of traffic and the added amount due to the now easy access to the valley, made this season remarkable for the number of visitors During the latter part of July and the first part of August travel began to fall off and gradually lessen till the daily number of new visitors to the Lodge fell from fifty to ten, the greatest day's registration being ninety and the least five. During the time of the Club's camp in the valley a number of camp-fires and informal Club meetings with their attendant announcements and characteristic programmes were held in front of the Lodge.

On the afternoon and evening of July 18th, at the suggestion of Mr. Charles Greene, of the Oakland Public Library, a flower exhibit of the wild flowers in the valley and vicinity and the commoner trees and shrubs was conducted in the Lodge. One hundred and eighty varieties, including flowers and ferns, trees and shrubs, were shown. The thanks of the Club are due Miss Ora Boring, of the Stockton High School, and her helpers for their untiring work in the classification and grouping of the species. In the evening the exhibit was opened by Mr. Greene with a few words about Dr. Le Conte, the Yosemite Valley, and the Sierra Club, followed by a poem "To Joseph Le Conte," read by the author, Mr. Charles Keeler, who concluded with a short talk fitting the occasion. The following poster and list of flowers will be a better account of the exhibit than can be put into words:—

WILD FLOWER SHOW

Thursday {*2:00 – 6:00* / *7:00 – 10:00*} *p.m.*

Flowers and receptacles for displaying same will be acceptable. In gathering flowers it is desired to have a few perfect specimens rather than a great quantity. People who are on the trails the day before could add greatly to the exhibit if they bring down some varieties from the heights. People able to classify the flowers are cordially invited to do so Thursday morning.

N.B.—As far as possible donations should be in Wednesday night and Thursday morning.

YOSEMITE FLOWERS.

[Compiled by Miss Ora Boring.]

July, 1907.

Lily Family.

1. Swamp Onion (Allium validum).
2. Cluster Lilies (Brodiæa grandiflora).
3. Golden Stars (Calliprora scabra).
4. Large Purple Stars (Eagle Peak Meadows).
5. Alpine Tiger-Lily (Lilium pardalinum parviflorum).
6. Butterfly Tulip (Calochortus venustus).
7. Poison Zygadene (Zygadenus venenosus).
8. False Hellebore (Veratrum Californicum).
9. False Solomon's Seal (Smilacina sessiliflora).
10. Pussy Ears (Calochortus Maweanus).

Iris Family.

1. Blue-eyed Grass (Sisyrinchium occidentale).
2. ——— ——— (S. bellum).

Orchid Family.

1. Rein-Orchis (Habenaria leucostachys).
2. Ladies' Tresses (Spiranthes Romanzoffianum).
3. Coral Root (Corallorhiza Bigelovii).
4. False Lady-Slipper (Epipactis gigantea).

Buckwheat Family.

1. Mountain Dock (Rumex Geyeri, Trelease).

2. Pussy Tails (Polygonum bistortoides).
3. Buckwheat (Eriogonum nudum).
4. Sulphur Flower (E. umbellatum —Cloud's Rest—low and flat).

Pink Family.

1. Starry Chickweed (Stellaria longipes).

Portulaca Family.

1. Miner's Lettuce (Montia perfoliata).
2. Pussy-Paws (Spraguea umbellata, Torr.—Calyptridium, Nutt.).
3. Lewisia rediviva (Sentinel Dome).

Buttercup Family.

1. Meadow Rue (Thalictrum sparsiflorum).
2. —(?)— (Thalictrum —(?)—)
3. Columbine (Aquilegia truncata).
4. Meadow Larkspur (Delphinium pratense).
5. Buttercup (Ranunculus alismæfolius).

Mustard Family.

1. Lace-pod (Thysanocarpus curvipes).
2. Tower mustard (Arabis perfoliata).
3. Jewel Weed (Streptanthus gracilis).
4. Wild Wall-Flower (Erysimum asperum).
5. Pepper Grass (Lepidum).

St. John's-wort Family.

1. St. John's-wort (Hypericum Scoulin).
2. Dwarf St. John's-wort) Hypericum anagalloides).

Violet Family.

1. White Violet (Viola blanda).
2. Yellow Pansy (Viola pedunculata).
3. Yellow Violet (Viola lobata).
4. Blue Violet (Viola —(?)—).

Geranium Family.

1. Crane's-Bill (Geranium incisum).
2. White Bill (Geranium Richardsonii).

California Lilac Family.

1. Coffee Berry (Rhamnus Californica—Cascara sagrada).
2. California White Lilac (Ceanothus integerrimus).
3. Snow-Bush (C. cordulatus).

Stonecrop Family.

1. Stonecrop (Sedum stenopetalum).
2. Cotyledon (Dudleya Sheldoni).
3. —— (Cotyledon Sheldoni).

Saxifrage Family.

1. Meadow Saxifrage (Saxifrage integrifolia).
2. Alpine Saxifrage (Saxifrage nivalis).
3. Wood-Star (Tellima scabrella).
4. Alum-Root (Heuchera micrantha).
5. Syringa (Philadelphus).
5. Syringa (H., new species—Hopkins Meadows, larger blossoms).
6. Prickly Gooseberry (Ribes amictum).
7. Wild Currant (Ribes ascendens).

Rose Family.

1. Wild Cherry (Cerasus emarginata).
2. Service Berry (Amelanchier alnifolia).
3. Black Raspberry (Rubus leucodonis).
4. Thimble Berry (Rubus parviflorus).
5. White Spiræa (Holodiscus dumosa—Meadow Sweet).
6. Pink Spiræa (Spiræa lucida).
7. Wood Rose (Rosa spithamea).
8. Wild Rose (Rosa Gratissima).
9. Wild Strawberry (Fragoria sibbaldifolia).
10. Silver Weed (Potentilla flabellifolia—Cinque Foil).
11. Cream-colored Silver Weed (Potentilla Nutalli).
12. Pale Yellowish Silver Weed (Potentilla lactea).
13. Horkelia (Horkelia tridentata).

Pea Family.

1. Purple Lupine (Lupinus Chamisonus).
2. Alpine Fern (Low and flat, with silky foliage).
3. Red Clover (Trifolium microcephalum).
4. Yellow and White Lotus (Lotus bicolor—Torrey).
5. Yellow- and Rose-colored Lotus (Lotus gracilis).
6. Spanish Clover (L. Americanus, flesh color).
7. Giant Lotus (Lotus crassifolius).
8. Wild Pea (Hosackia Ericola).

Evening Primrose Family.

1. Fire Weed (Epilobium Watsonii).
2. —— (Epilobium brevistylum).
3. Evening Primrose (Œnothera biennis).
4. Small Yellow Œnothera.
5. Small Pink Œnothera.
6. Godetia (Godetia pulcherrima).

Parsley Family.

1. Sweet Cicely (Osmorrhiza nuda).
2. Poison Hemlock (Conium maculatum).
3. Ginseng (Aralia Californica—Spikenard).

Dogwood Family.

1. Dogwood (Cornus Nuttalli).
2. Dogwood (Cornus occidentalis).

Mistletoe Family.

1. Pine mistletoe (Razoumofskya occidentalis).

Heath Family.

1. Manzanita (Arctostaphylos Mariposa).
2. Alpine Heather (Bryanthus Breweri).
3. Azalea (Rhododendron occidentale).
4. Rose-colored Shin-Leaf (Pyrola picta).
5. White Shin-Leaf (Pyrola picta pallida).
6. Pine Drops (Pterospora andromedea).
7. Snow Plant (Sarcodes sanguinea).
8. Labrador Tea (Ledum glandulosum).

Primrose Family.

1. Mountain Primrose (Primula suffrutescens).
2. Mosquito Bills (Dodecatheon alpinum).

Gentian Family.

1. Canchalagua (Erythrea venusta).

Dogbane Family.

1. Dogbane (Apocynum pumilum).

Milkweed Family.

1. Silk Weed (Asclepias speciosa).
2. Mexican Milkweed (A. Mexicana).
3. Purple Milkweed (Gomphocarpus cordifolius).

Morning-Glory Family.

1. Dodder (Cuscuta subinclusa).

Nightshade Family.

1. Nightshade (Solanum Xanti).

Figwort Family.

1. Innocence (Collinsia tinctoria).
2. California Bee Plant (Scrophularia Californica).
3. Pink Pentstemon (P. Newberryi).
4. ——— (P. brevifloris).
5. Violet Beard-tongue (P. laetus).
6. Scarlet Bugler (P. laetus).
7. Purple Beard-tongue (P. procerus).
8. Indian Paint-Brush (Castilleia Montana).
9. Yellow Paint-Brush (Castilleia (?).
10. Pink Monkey Flower (Mimulus Lewisii).
11. Small Purple Mimulus (Mimulus Bolanderi).
12. Primrose Mimulus (Mimulus primuloides).
13. Musk-Plant (Mimulus moschatus).
14. Speedwell (Veronica serpyllifolia).
15. Cancer Root (Aphyllon fasciculatum—Naked Broom-Root).
16. White Owl's Clover (Orthocarpus purpurascens).
17. Yellow Owl's Clover.

Phlox Family.

1. Wild Bovardia (Gilia grandiflora).
2. Scarlet Gilia (Gilia aggregata).
3. Pale Blue Gilia (Gilia Achillæfolia).
4. ——— (Linanthus montanus).
5. ——— (Linanthus bicolor).
6. Alpine Snow (Phlox Douglasia).
7. Mountain Verbena (Polemonium eximium).

Baby-Eyes Family.

1. Water Leaf (Phacelia hydrophylloides).
2. ——— (Phacelia mutabillis).
3. Stinging Phacelia (Phacelia stimulans).

Borage Family.

1. Hound's Tongue (Cynoglossum grande).
2. Mountain Forget-me-not (Lappula diffusa).
3. Pop-Corn Flower (Plagiobothrys Torreyi).

Mint Family.

1. Pennyroyal (Monardella odoratissima).
2. Horse-mint (Lophanthus urticifolius).
3. Brunella or Self Heal.

Madder Family.

1. Goose Grass or Bed Straw (Galium tinctorium).
2. White Bed Straw (Galium triflorum).

Honeysuckle Family.

1. Twinberry (Lonicera involucrata).
2. Yellow Honeysuckle (Lonicera interrupta).
3. Elder (Sambucus glauca).

Harebell Family.

1. Cream-colored Harebell.

Sunflower Family. Compositæ.

1. Sow-thistle.
2. Aster (Aster Andersonii).
3. Purple Mountain Daisy (Erigeron salsuginosus).
4. Tall White Daisy with many fine rays.
5. Golden-Rod (Solidago).
6. Layia.
7. Madia or Tar Weed.
8. Sun Flower (Helianthus Californicus).
9. Rag Weed (Ambrosia).
10. Everlasting Flower (Gnaphalium).
11. Papery Everlasting (Soft open flowers, larger than other).
12. Lessingia leptoclada.
13. Yarrow Milfoil (Achillea millefolium).
14. Brown-eyed Susan.
15. Dog Fennel.

Water-Leaf Family, or Baby-Eyes (Vide).

1. Yerba Santa (Eriodictyon Californicum).

Sumach Family (Poison Oak).

1. Poison Oak (Rhus diversiloba).

Pipe-Vine Family.

1. Ginger Root (Asarum caudatum).

Water Lily Family.

1. Yellow Pond-Lily (Nuphar polysepalum).

Oaks.

1. Maul Oak, Golden-Leaf Oak (Quercus chrysolepus).
2. Black Oak.

Poplar.

1. Cottonwood (Populus).

Maple.

1. California Maple.
2. Oregon Maple (Acer macrophyllum).

Willow.

1. Salix.

Conifers.

1. Sugar Pine.
2. Yellow Pine.
3. Tamarack Pine.
4. Jeffrey Pine.
5. Monophilla.
6. Douglas Spruce.
7. Williamson Spruce.
8. White Fir.
9. Red Fir.
10. California Juniper.

Ferns.

1. Rock Fern (Cheilanthes).
2. ——— (Aspidium).

Beginning with the *Oaks*, this list is incomplete; also in indicated places above this point.

As a result of the exhibit, the Lodge now has a very fair collection of pressed flowers ready for mounting and putting into such a form that it may be easily consulted for identification by those interested. The lively interest taken in the affair should urge its repetition during coming seasons.

LIST OF BOOKS IN THE LODGE LIBRARY AUGUST 11, 1907.

Holy Bible.
Poems and Hymns.
Autobiography of Joseph Le Conte. Armes. Berkeley edition.
Elements of Geology. Le Conte.
Bird Notes Afield. Keeler.
Birds of California. Wheelock.
Our National Parks. Muir.
The Mountains of California. Muir.
Mountaineering in the Sierra Nevada. Clarence King.
Big Trees of California. Clark. 2 copies.
Indians of the Yosemite. Clark.
The Kindred of the Wild. Roberts.
Hunting in Many Lands. Boone and Crockett Club.
American Big Game in Its Haunts. Boone and Crockett Club.
Our Lost Explorers of the Jeannette Arctic Expedition.
Mountain Exploration. Balch.
Bibliography of the Geology, etc., of California.
Structural and Industrial Materials of California.
Copper Resources of California.
Petroleum in California.
Gold Dredging in California.
The Yosemite Valley. Hutchings.
The Modern Speech New Testament. Weymouth.

U. S. Geological Survey, 1886-1887, Part I.
U. S. Geological Survey West of 100th Meridian, Part III, 1881.
Grand Cañon of the Colorado River. Higgins.
A Flora of the South Fork of King's River. Eastwood. 2 copies.
My Trip to King's River Cañon. Le Conte. 2 copies.
Conifers of the Pacific Slope, No. III. Lemmon. 2 copies.
The Geomorphogeny of the Upper Kern Basin. Lawson.

The committee is indebted to the following:—

Major H. C. Benson—for his courtesy and aid in everything pertaining to the welfare of the Club, and for a map of Yosemite Valley and one of the Mariposa Big Tree Grant.
Mr. James Mills—Collection of mounted flowers; the Modern Speech Testament (Weymouth).
D. J. Foley—Book of Views of Yosemite Valley; Anderson Spike from Half Dome.
Mr. Fiske—Four winter scenes of the valley, mounted.
Mr. Galen Clark—Two copies Big Trees of California (Clark).
Lewis E. Aubury, State Mineralogist—Bulletins 23, 30, 31, 32. 36, 38, 42, 43, 44; Maps and Register, Mariposa-Tuolumne; Relief Map and Mineral Map of California; Forest Reserve Map of California.
Mrs. R. H. Simonds—Bird Notes Afield (Keeler).
Dr. G. K. Gilbert—Map of Yosemite, advance sheet.
Miss Ora Boring—Collection of pressed flowers.
The Pacific Monthly Publishing Company—*Pacific Monthly* for the summer months.

The Memorial Bronze of Dr. Le Conte has been fittingly placed in the Lodge.

The Lodge closed for the season on August 11, 1907, with a registration of approximately two thousand names.

Very respectfully,
KATE R. GOMPERTZ, *Custodian.*

Respectfully submitted,
E. T. PARSONS, *Chairman,*
WM. F. BADÊ,
J. N. LE CONTE,
Le Conte Memorial Lodge Committee.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is Room 302 Mills Building, San Francisco, where all Club members are welcome, and where all the maps, photographs, and other records of the Club are kept.

The Club would like to secure additional copies of those numbers of the SIERRA CLUB BULLETIN *which are noted on the back of the cover of this number as being out of print, and we hope any member having extra copies will send them to the Secretary.*

The year that has just passed leaves several empty places in our camp-fire circle. No loss is more deeply and sincerely regretted than that of Mrs. William Frederic Badè, whose sad death, on September 17th, deprived the Club of one of its most talented and charming young women. Those of us who remember her as Miss Mary Ratcliff, on the Outings of 1904 and 1905, grieve not only for the beautiful girl whose brightness, untiring energy, and splendid voice won admiration from the most casual acquaintance; but for the warm-hearted companion, the good comrade, who made many a fair day the fairer by her presence. The summer of 1905 she was one of the few who made the three ascents of the Outing—Mt. Hood, Mt. Rainier, and Mt. Shasta.

The death of Mr. P. A. Kanawyer will be sad news for his many friends in the Club. For many years past he has had charge of the travel between Millwood and the King's River Cañon. His widow, assisted by members of his family, will continue the packtrain and camp-hotel business.

U. S. Geological Survey: On January 18, 1908, the Director recommended and the Secretary of the Interior approved the following changes in the personnel of the Topographic Branch:

Robert B. Marshall, Geographer, formerly in charge of the Pacific Division, to be Chief Geographer.

Thomas G. Gerdine to be Geographer in charge of the Pacific Division.

Newly Discovered Cave in King's River Cañon:—This limestone cave seems to be a discovery of magnitude. A recent exploration by parties from Fresno shows that the cave extends in something over 1,500 feet, and contains some of the most beautiful chambers of stalactites and stalagmites that can be imagined. It is within three hundred feet of the survey of the State road to the cañon.

The Road to King's River Cañon:—The State Engineer writes concerning the progress of this road as follows:—

"We now have the survey built about half a mile beyond the Cedar Grove Hotel, and from the General Grant National Park we have completed the construction work for two miles. Beyond this completed road, we have grubbed out, or brushed, the roadway for three miles, so that early next spring we may continue the work and rush it as far as we can before the snow flies."

Muir Woods:—The above is the official name given to the tract of redwood groves donated by Mr. William Kent for a public park. The tract includes an area of 295 acres, lying on the slope of Mt. Tamalpais. It was deeded to the government with the approval of Chief Forester Gifford Pinchot, and will be cared for by the government as a public park. The trees in these groves consist principally of original growth of Sequoia sempervirens and some Douglas spruce. They are the most accessible of any redwood groves, and are easily reached from San Francisco. In recognition of Mr. Kent's generosity the Board of Directors of the Sierra Club has adopted the following resolution:—

"*Resolved,* That the Sierra Club extend a hearty vote of thanks to Mr. William Kent in testimony of its appreciation of his noble gift to the Federal Government, of the Redwood Cañon on Mt. Tamalpais, with its magnificent primeval groves of Sequoia sempervirens, to be devoted as a public park and pleasure ground to the people forever.

"By order of the Board of Directors."

Mr. Herbert W. Gleason, the noted mountaineer, mountain photographer and lecturer, of Boston, favored the Club with two of his finest lectures on October 4 and 5, 1907. They were delivered at the Masonic Temple in Berkeley. One was entitled, "Alpine Scenery and Wild Flowers of the Cascades and Canadian Rockies"; the other, "In Thoreau's Country."

Probably there is no man who knows the Canadian Alps more thoroughly than Mr. Gleason, and certainly it would be hard to find a more magnificent collection of photographs than he has obtained. The views selected for this series of lectures were the choicest in Mr. Gleason's collection.

In 1905 and in 1906 Mr. Gleason was a member of the famous mountain-climbing excursions of the Sierra Club and the Mazama Club of Oregon, in the former year to Mts. Hood, Rainier, and Shasta, and in the latter year to the unexplored region around Mt. Baker. A large amount of exceedingly interesting material was secured on these trips, the best portion of which was presented in the lecture.

With the idea of reproducing pictorially some of the very scenes and phenomena described by Thoreau, Mr. Gleason made many pilgramages to Concord during the past few years, and has taken several hundred photographs of the actual localities and objects of which Thoreau speaks so familiarly.

The Mountaineers, our fellow mountaineering club of Seattle, have set their outing for July 18th to August 1st, and will visit and climb Mt. Baker and Mt. Shuksan, in the Cascades.

The Mazamas will go to Mt. St. Helens for their outing, some time in July,—date not yet set.

A complete set of the SIERRA CLUB BULLETINS has been collected by our esteemed member, Mr. Charles S. Greene, of the Oakland Public Library, and it will soon be available for reference in the Reference Department of that institution.

BOOK REVIEWS.

EDITED BY WILLIAM FREDERIC BADÈ.

"THE BIG TREES OF CALIFORNIA."

Among the books that have come to the reviewer's table is an interesting little volume by Galen Clark. It is entitled *The Big Trees of California.** Mr. Clark undoubtedly has earned a veteran's right to speak about the Sequoias, for he has known them a long time. For many years he was Guardian of the Yosemite Valley, and he claims to be the first white man who set foot in the Mariposa Grove of Big Trees. The book is abundantly illustrated with good photographs, the frontispiece being one of the author himself. The contents are composed of a dozen thumb-nail sketches under such titles as "Origin of the Big Trees," "Age of the Sequoias," "Habits and Characteristics," "Cones and Seeds," "Celebrated Specimens," etc. No attempt is made to deal with the subject exhaustively, each sketch being studiously brief. The salient facts only are given in form suited particularly to the taste and needs of the tourist, who is bound to find this an exceedingly convenient little manual of information. One is bound to place a question-mark behind the statement on page 58, that Sequoias "catch the electric ether from the atmosphere" as "one of their most vital sources of life." But that is an insignificant matter in a book that has so many merits. Mr. Clark has passed the remarkable age of four score and ten, so that this little book has gathered into itself the loving memories of long years spent among the noblest of all trees. The book seems to have been privately printed, but copies may doubtless be obtained by addressing the author in Yosemite Valley. W. F. B.

"IDLE RHYMES FROM OREGON."

Idle Rhymes from Oregon is the title of a booklet by Mr. C. H. Sholes, who is the president of the brother organization of the Sierra Club in the North, the Mazama Club. The author has gathered into book form his various occasional poems suggested by sights, scenes, and incidents in the mountains. Mr. Sholes exhibits in these products of his pen a keen appreciation of nature. A number of excellent half-tones accompany the "Rhymes." The photograph of the water-ouzel by Gertrude Metcalfe is a notably successful piece of camera work. The pamphlet is limited to two hundred copies and has been "done into print by the Roycrofters at their shop which is in East Aurora, New York."

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* *Big Trees of California.* By GALEN CLARK. Yosemite Valley, Cal. Pp. 103, with 20 illustrations.

W. F. B.

"THE SHAMELESS DIARY OF AN EXPLORER."

At first blush one hardly knows what to make of *The Shameless Diary of an Explorer.*[*] The book is unique in every way. The author was a member of Professor Cook's party which in 1903 made an unsuccessful attempt to climb Mt. McKinley. In the words of the author "this is the story of a failure. I think that success would have made it no more worth telling. It is about an exploring party, the sort that so often fails." The adjective "shameless" points to the chief characteristic of the book, although it is apparent from the author's defense of his motives in publishing it that he does not intend the adjective to be taken too literally. He professes to give in this diary an absolutely unvarnished account of all that happened during the expedition. He writes, "I started and maintained my record with the sole idea of stating facts as I saw them, emotions as I felt them at their time. . . . Maybe it has been a shameless task. I know that it is without malice. For heaven's sake, do not read these pages with charity."

"If he, the explorer, is pledged to exactitude about his diptera, is he not obliged, in relating human deeds at all, to record as truthfully and in full how the outer waste and the ego of each companion uplifted or scarred his own? If such a record be not as direct, as full, as frank, as his registry in science, by what hypocrisy under the sun has he right to state at all the words or acts of any fellow? . . . I believe that no motives of any sort distort my written record, except the elements of my own temperament and heritages. And I hope that in reporting any inherent vanity in my fellows, I have hit off hardest my own insufferable egotism." This is the author's apology for the contents of his book. The reader soon feels that some such positive assertion of absence of malice is necessary, for Professor Cook and "Simon" come in for a good deal of criticism and disparagement. Yet no one who has once begun the book is likely to lay it aside before he has reached the last page. The author knows how to paint a vivid picture with a few strokes. The reviewer has never read more realistic descriptions of the Alaskan tundra, or of difficulties encountered with pack animals in fording rivers and crossing glaciers. At these points the author's ability rises to the level of genius. There are not a few disfiguring crudities of language and taste, and some things that had better been left unwritten. But when all is said the book is one that will have to

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[†] *The Shameless Diary of an Explorer.* By Robert Dunn. The Outing Publishing Company, New York, 1907. Pp. 297, with map and photographs.

be reckoned with by future explorers of the Alaskan wilds. A number of good photographs are scattered through the volume, including a frontispiece of Mt. McKinley. W. F. B.

After reviewing *The Shameless Diary of an Explorer* it is some satisfaction to be able to record the successful first ascent of Mt. McKinley by Professor Frederick A. Cook, M. D., on the sixteenth of September, 1906. An excellent account of the ascent, written by Professor Cook, will be found in *Harper's Monthly Magazine*, May, 1907. The altitude of the mountain was found to be 20,391 feet. Edward Barille made the ascent with Professor Cook. One night they camped in a hole dug into the snow on a sixty-degree slope, and at an altitude of 14,200 feet.

The Alpine Journal of Canada.

This illustrated annual has just been published by the Alpine Club of Canada. In addition to some ten mountaineering articles by climbers of experience, and scientific papers on "Glacier Observations," with maps, there are special contributions by Sir Sandford Fleming, K. C. M. G., on "Journeys Through the Mountains Thirty-seven Years Ago"; by Mr. A. O. Wheeler, F. R. G. S., on "The Canadian Rockies as a Mountaineering Field"; and by Ralph Connor, a humorous sketch of "Amateur Climbing." It is announced that there will be no reprint of this annual,* and that the price will advance as the supply decreases. E. T. P.

Alpina Americana.

The American Alpine Club has begun the publication of a systematic illustrated work presenting monographs of the Alpine Mountains of the Western Hemisphere. The first number was issued early in 1907, and was a masterly presentation of the High Sierra by Professor J. N. Le Conte, a leading authority on this region.

The work will be a handsomely printed quarto, the trimmed page measuring 10½ by 13½ inches. The illustrations will form a striking feature; not only will they be numerous, but many of them of the impressive size permitted by so large a page. So far as the conditions of high Alpine photographing permit, the half-tones will be of the best workmanship. Professor Le Conte's own photographs furnished the beautiful illustrations of the initial number. It also contained a lithograph copy of the author's new map of the Sierra Nevada.

The several numbers of this series will form a volume that no lover of mountains can afford to be without.

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* *The Alpine Journal of Canada.* Published by the Alpine Club of Canada, Mrs. H. J. Parker, Secretary, 160 Furby Street, Winnipeg, Man. Vol. I. Price, paper, 75 cts.; cloth, $2.00.

The American Alpine Club has only a very limited membership; but it proposes to spend its funds without stint for this undertaking, expecting no adequate financial return. If compelled, however, to rely chiefly upon the income from membership fees, the issues of so expensive a publication will, of necessity, be rare. Should the enterprise receive from the members of American mountain clubs, such as the Appalachian Mountain Club, the Alpine Club of Canada, the Mazamas, the Mountaineers, and the Sierra Club, and from American geographical societies, the encouragement in the way of subscriptions that it will aspire to deserve, the frequency of issue would be measurably increased.

The price per number to members of these societies will be 35 cents. Members are invited to send to the treasurer of the club, Mr. William S. Vaux, Jr., 807 Bailey Building, Philadelphia, their subscriptions with signature and address, and the amount of the first subscription. E. T. P.

"ROUND ABOUT THE NORTH POLE."

A recent addition to our rapidly growing library is *Round About the North Pole,*[*] by W. J. Gordon, which was presented to the Club by its illustrator, Edward Whymper. The book is an exceedingly interesting history of Arctic exploration. The author has not attempted to deal chronologically with his great mass of material, but has made a separate story of the discovery and exploration of each region. Spitzbergen, Novaya Zemlya, Franz Josef Land, and Greenland are among the countries whose stories are thus chronicled; and the voyagers whose perseverance and heroism are recounted range from Henry Hudson to Nansen. This stirring portrayal of strenuous endeavor throughout the centuries is most thrilling and fascinating, and will charm and delight those who have opportunity to enjoy it. M. R. P.

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[*] *Round About the North Pole.* By W. J. GORDON. Illustrated by Edward Whymper. John Murray, Publisher, London, England. 294 pages, 67 illustrations, 5 maps.

FORESTRY NOTES.

Edited by G. B. Lull.

Fifteenth National Irrigation Congress. Probably no other gathering of industrial interests has been so assiduously and broadly advertised as the Fifteenth National Irrigation Congress, held in Sacramento in September. Forestry was made a special feature, especially in the Interstate Exposition, which was a part of the proceedings. Among the prizes and trophies offered for special exhibits the Diamond Match Company and the Pacific Hardware Company each presented one for the best collective State exhibit of forest products, but most significant was the offering of a trophy by the California Wine Association for a suitable substitute for oak staves, accentuating the growing scarcity of the supply which is coupled by a constant and rapidly increasing demand.

Of special interest to California was the following resolution adopted by the Congress:—

> "*Resolved,* That the Fifteenth National Irrigation Congress urges upon the people of California the need of enacting a law giving the State Board of Forestry power to examine all private forest holdings on the watersheds of irrigable streams and to designate and enforce such rules for cutting as in its judgment will secure the continuity of said forests and prevent injury to said streams."

Mr. L. D. Van Rensselaer, of Ithaca, N. Y., advertises insurance against loss from fire of uncut timber and for cut wood lying in the forest.

The State of Washington has entered the number of States providing educational facilities for forestry in connection with the College of Agriculture. Professor W. S. Thornber is in charge.

Eucalyptus Planting. That the Santa Fe Railway Company, which purchased a tract of 8,300 acres in San Diego County last year for eucalyptus production, has faith in the value and adaptability of this remarkable genus for railroad use is evinced by the sending of its expert, F. T. Hosp, to Australia to study the eucalyptus in their native habitat, and by the further fact that prominent officials in the company have recently purchased a ranch near Carlsbad for eucalyptus production. This action, which is in line with the policy of many large wood-using concerns, looks toward a supply of material when our rapidly disappearing forests have been exhausted. In less favorable sections these corporations are gradually acquiring and protecting the uncut timber for future use. In the climatic range of eucalyptus, however, its quick-growing qualities render its propagation for use in the not distant future a feasible proposition.

In practically all parts of California that are climatically suited, interest in planting eucalyptus is growing. To meet inquiries as to the species to plant, planting methods, and probable returns, the State Board of Forestry has prepared a circular for free distribution. This circular will be available by December 20th. Copies may be obtained by addressing the State Forester, Sacramento.

The city of San Bernardino deserves credit for taking an advanced position with regard to its land possessions. Instead of allowing them to lie idle or to serve as grazing commons, the city proposes to plant eucalyptus on them for revenue. The practice is old in European countries, but, so far as known, has never before been followed by a municipality in the United States.

STATE FORESTER AT FARMERS' INSTITUTES.

At several of the farmers' institutes held in various parts of northern California recently a new feature of the programme has been talks on forestry by the State Forester. The interest shown in this subject proves the people are awakening to the need of growing trees for fuel, protection, and ornament.

RANGERS' MEETINGS.

The forest service, through its inspectors at the San Francisco headquarters, has been holding rangers' meetings recently at several of the national forest headquarters in northern California. These meetings are attended by the local forest officers, supervisors, rangers, and guards. Their object is to increase the efficiency of the service by a discussion of the many-sided problems the officers have to solve, and by establishing intimate relations with the users of the forests.

REDWOOD PARK.

The popularity of California Redwood Park in Santa Cruz County, is increasing every year. Since April 1, 1907, the register at the park shows there have been 2,730 visitors. It is estimated, however, that fully ten per cent of the visitors fail to register; so the attendance during the period mentioned has not been less than three thousand. Last year the total number did not exceed eighteen hundred. When the short-line railroad from San Francisco resumes operations, and the long detour via Pajaro is avoided, the number will be much larger.

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No. 38

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Vol. VI No. 5

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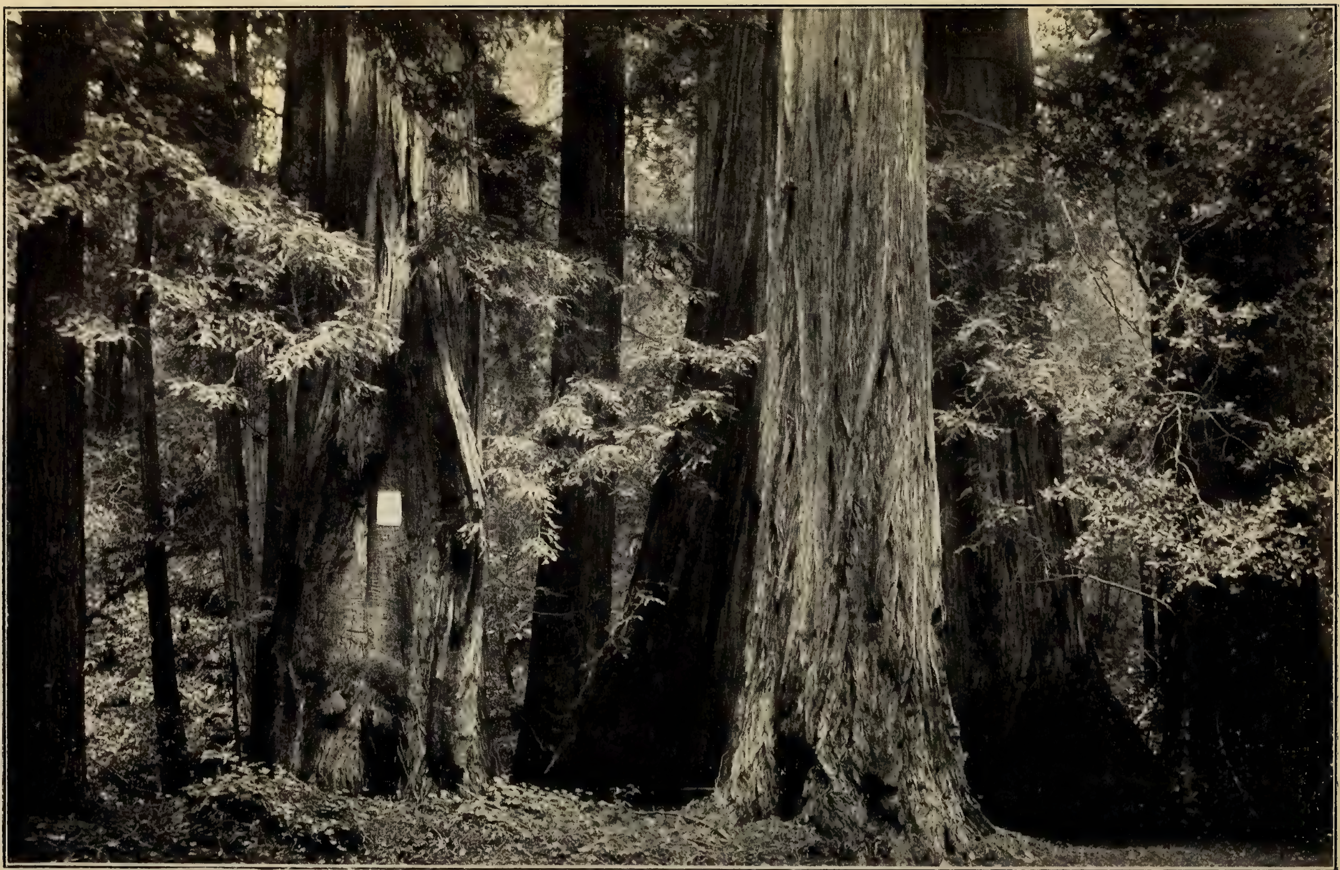
All communications intended for publication by the SIERRA CLUB, and all correspondence concerning such publication, should be addressed to the Editor, Elliott McAllister, Room 302 Mills Building, San Francisco, California.

Correspondence concerning the distribution and sale of the publications of the Club, and concerning its business generally, should be addressed to the Secretary of the Sierra Club, Room 302 Mills Building, San Francisco, California.



MUIR WOODS.

SIERRA CLUB BULLETIN.

VOL. VI. SAN FRANCISCO, JUNE, 1908. No. 5

WILLIAM KENT'S GIFT.

BY E. T. PARSONS.

The peculiarly enlightened and significant gift of Muir Woods, the Redwood Cañon grove on the flank of Mount Tamalpais, to the National Government by William Kent, of Chicago, is a transaction worthy of record in these pages.

This, the only remaining nearby forest of the kind, easily and cheaply accessible to nearly three quarters of a million people, rich and poor alike, was in imminent danger of destruction. Apparently not a single Californian of sufficient means either perceived or understood this opportunity for the greatest benefaction the bay region can ever receive.

The architraves of these groveland temples were already emplaced when Columbus first sailed the ocean. King Arthur's Round Table might have been made from one of their pillars. Our Druid ancestors might have celebrated their mystic rites beneath these lofty arches. Had the prevailing shortsighted commercialism succeeded in overthrowing these canopied columns centuries could not have replaced their grandeur and beauty. So that the gift of this easterner of fine perception and ideals is beyond compare, inestimable and priceless.

The accompanying photographs give some vistas in this beautiful park; and, that we may better know and understand the giver, I introduce an appreciation of the redwoods by William Kent and his correspondence relative to this gift with our worthy President and the Secretary of the Interior:

REDWOODS.

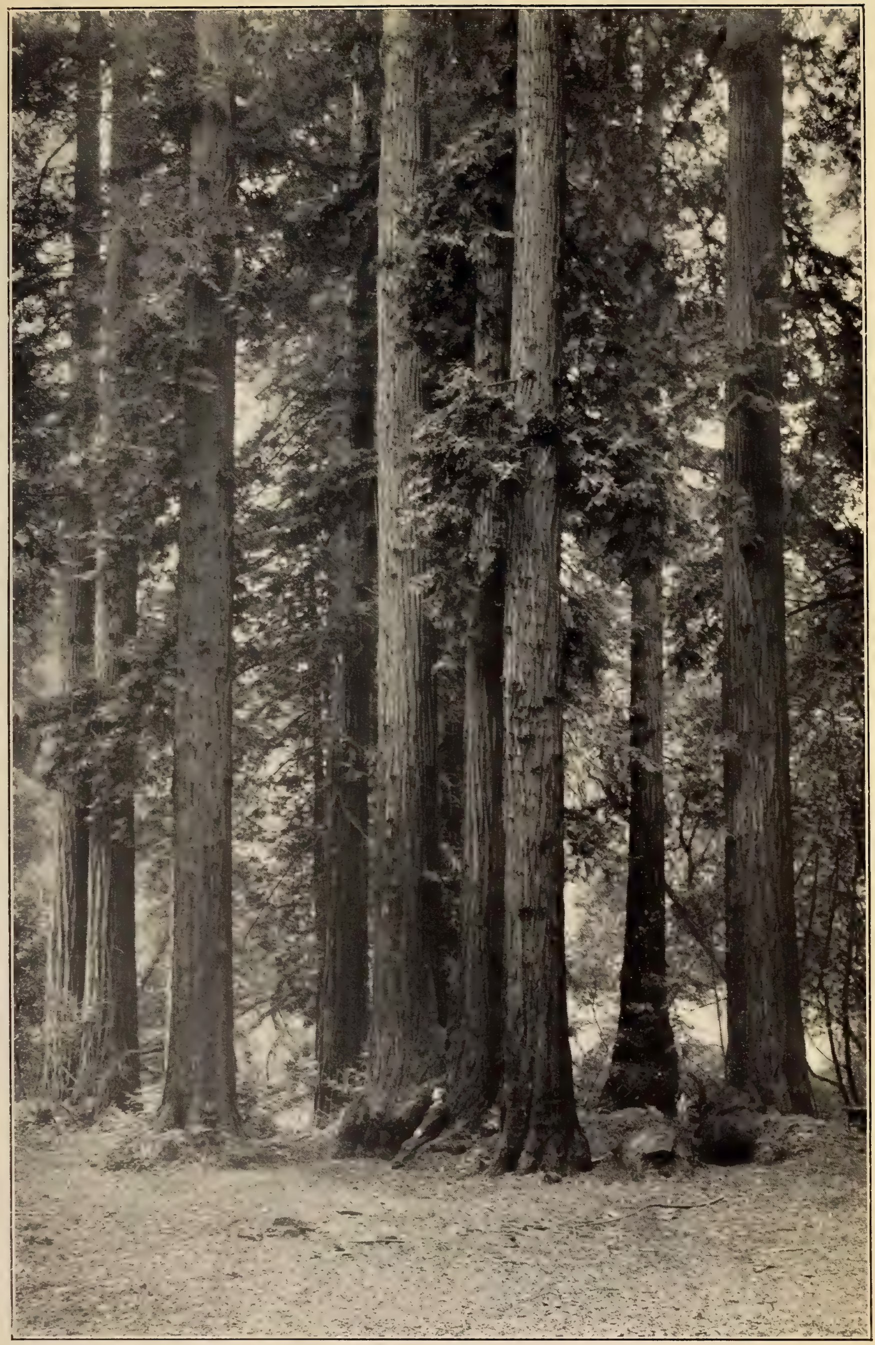
By William Kent.

In the hospitable country of the California coast range dwell the redwoods. They cluster in the sheltered valleys and climb part way up the deep-soiled north hill slopes. Through their tops sifts the mild sea fog, and at their roots flow trout streams that they have condensed for the benefit of all living creatures. Salmon visit them from the neighboring ocean, deer trip and bear shuffle down their aisles.

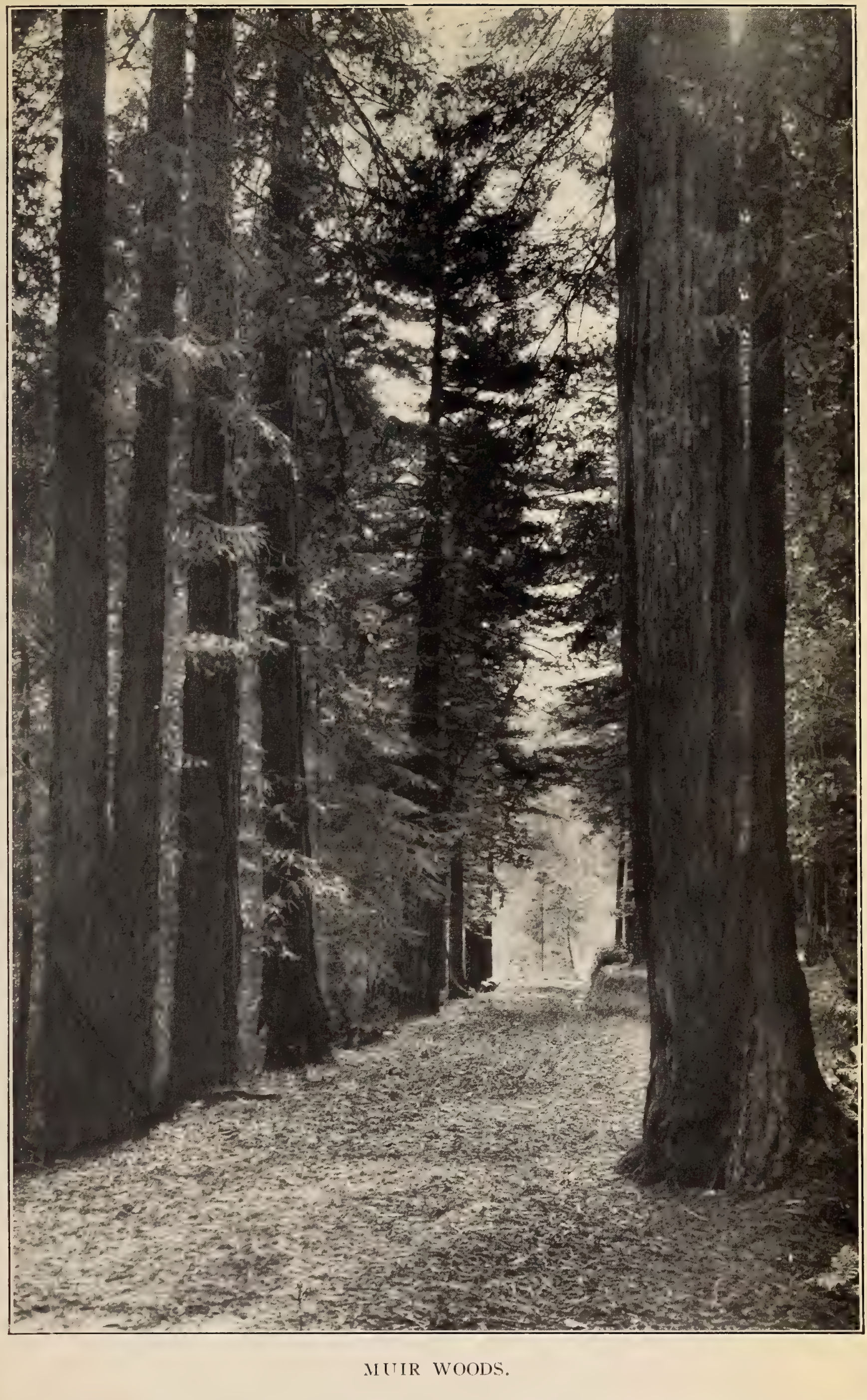
Viewed from without, the forest shows a rich and varied coloring. The ruddy tinge of the redwood foliage makes sharp the brighter green of Douglas fir, while softening all is the silver gray of mountain oak.

There is none of the solid rounded surface of the jungle, nor the ragged gray outlines of the leafless winter woods. Strong and delicate show the individual trees living at peace, each his own life. Beyond the ridge at the back of the forest shines the sunlit sea. The landscape gives scarcely a hint of the size and proportions of the trees.

As we go down the slope the redwoods increase in size until in the flat bed of the valley we reach their perfection. Our ideas of dimension are all at fault. We expect something that will strike and challenge the eye in trees that measure their diameter in terms of fathoms and that climb as straight, clear columns two hundred feet without a limb, with tops reaching yet a hundred feet or more. We must compare these heroic proportions with our own stature before we can realize the symmetrical grandeur of the redwoods. The thick, soft, warm-tinted bark, with its vertical corrugations, suggests the clear, clean wood within. The delicate foliage sifts the sunlight, not precluded, but made gentle.



MUIR WOODS.



MUIR WOODS.

"Live and let live," say the redwoods. "Sun, air, water, soil, and shade for all." But they say more than this. Mountain oak and laurel that would share the forest life, these because they are able to grow tall—if they have the will—these, if they would enjoy the commonwealth of the sky, must grow straight-trunked and clean.

For the moment the redwoods seem to us the stoics of the forest, teaching that life is for the strong, the self-reliant. Then beneath our feet we find the most delicate forest carpet of shy wood violets and oxalis. Lilies that need the deep, cool quiet are here and many a rare, small thing that cannot live elsewhere. Ferns and maidenhair bank the slopes.

"Stand straight and strong, who can," say the redwoods; "protect and shelter the weak." This is the chivalry of the forest; it is a chivalry the Christian world has hardly learned, despite the Master.

Brave trees, the redwoods. Burned of all their leaves, they fight for life and bourgeon out again. Around the fallen parent grows up a stately group of children.

Long life, well lived, strength and resultant quietness; modesty, courage, beauty and the kindliness of infinite hospitality!

An American Wordsworth will one day come to sing these noble trees as teaching the ideal of the social and individual life of the American.

THE CORRESPONDENCE.

HON. JAMES R. GARFIELD, Secretary Interior, U. S.

Dear Sir: I herewith enclose a deed of gift to a tract of land in Marin County, California, more fully described by accompanying documents, and request that you accept it as provided for by the Act of June 8, 1906. . . .

After having traveled over a large part of the open country in the United States, I consider this tract, with its beautiful trees, ferns, wildflowers, and shrubs, as the most attractive bit of wilderness I have ever seen.

In tendering it I request that it be known as Muir Woods, in honor of John Muir. . . . Yours respectfully,

WILLIAM KENT.

THE WHITE HOUSE, Washington.

My dear Mr. Kent: I thank you most heartily for this singularly generous and public-spirited action on your part. All Americans who prize the natural beauties of the country and wish to see them preserved undamaged, and especially those who realize the literally unique value of the groves of giant trees, must feel that you have conferred a great and lasting benefit upon the whole country.

I have a very great admiration for John Muir; but after all, my dear sir, this is your gift. No other land than that which you give is included in this tract of nearly three hundred acres, and I should greatly like to name the monument the Kent Monument if you will permit it.

Sincerely yours,
THEODORE ROOSEVELT.

TO THE PRESIDENT, Washington.

My dear Mr. Roosevelt: I thank you from the bottom of my heart for your message of appreciation, and hope and believe it will strengthen me to go on in an attempt to save more of the precious and vanishing glories of nature for a people too slow of perception.

Your kind suggestion of a change of name is not one that I can accept. So many millions of better people have died forgotten that to stencil one's own name on a benefaction seems to carry with it an implication of mundane immortality, as being something purchasable.

I have five good, husky boys that I am trying to bring up to a knowledge of democracy and to a realizing sense of the rights of the "other fellow," doctrines which you, sir, have taught with more vigor and effect than any man in my time. If these boys cannot keep the name of Kent alive, I am willing it should be forgotten.

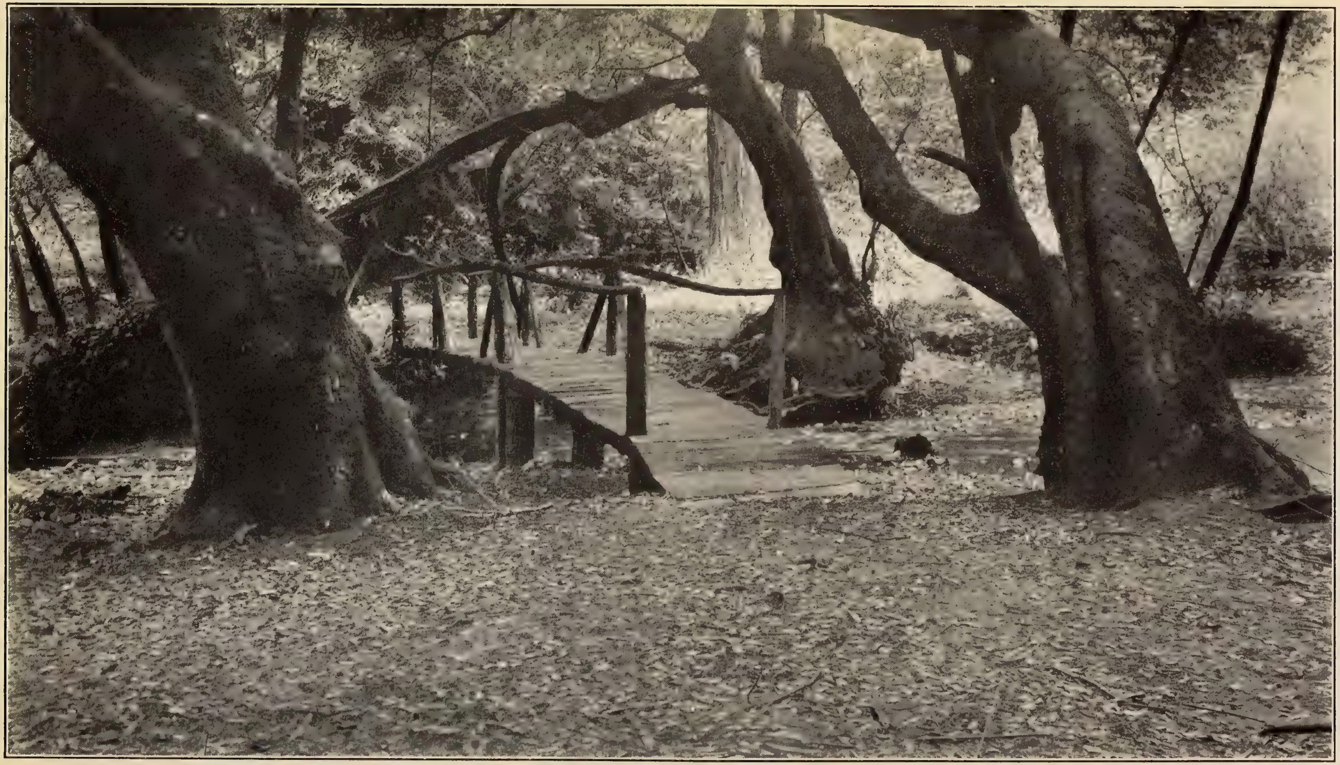
I have this day sent you by mail a few photographs of Muir Woods, and trust that you will believe, before you see the real thing (which I hope will be soon), that our nation has acquired something worth while.

Yours truly,
WILLIAM KENT.

THE WHITE HOUSE, Washington.

My dear Mr. Kent: By George! you are right. It is enough to do the deed and not to desire, as you say, to "stencil one's

PLATE LXVI.



CALIFORNIA LAUREL IN MUIR WOODS.

own name on the benefaction." Good for you, and for the five boys who are to keep the name of Kent alive! I have four who I hope will do the same thing by the name of Roosevelt. Those are awfully good photos.

Sincerely yours,
Theodore Roosevelt.

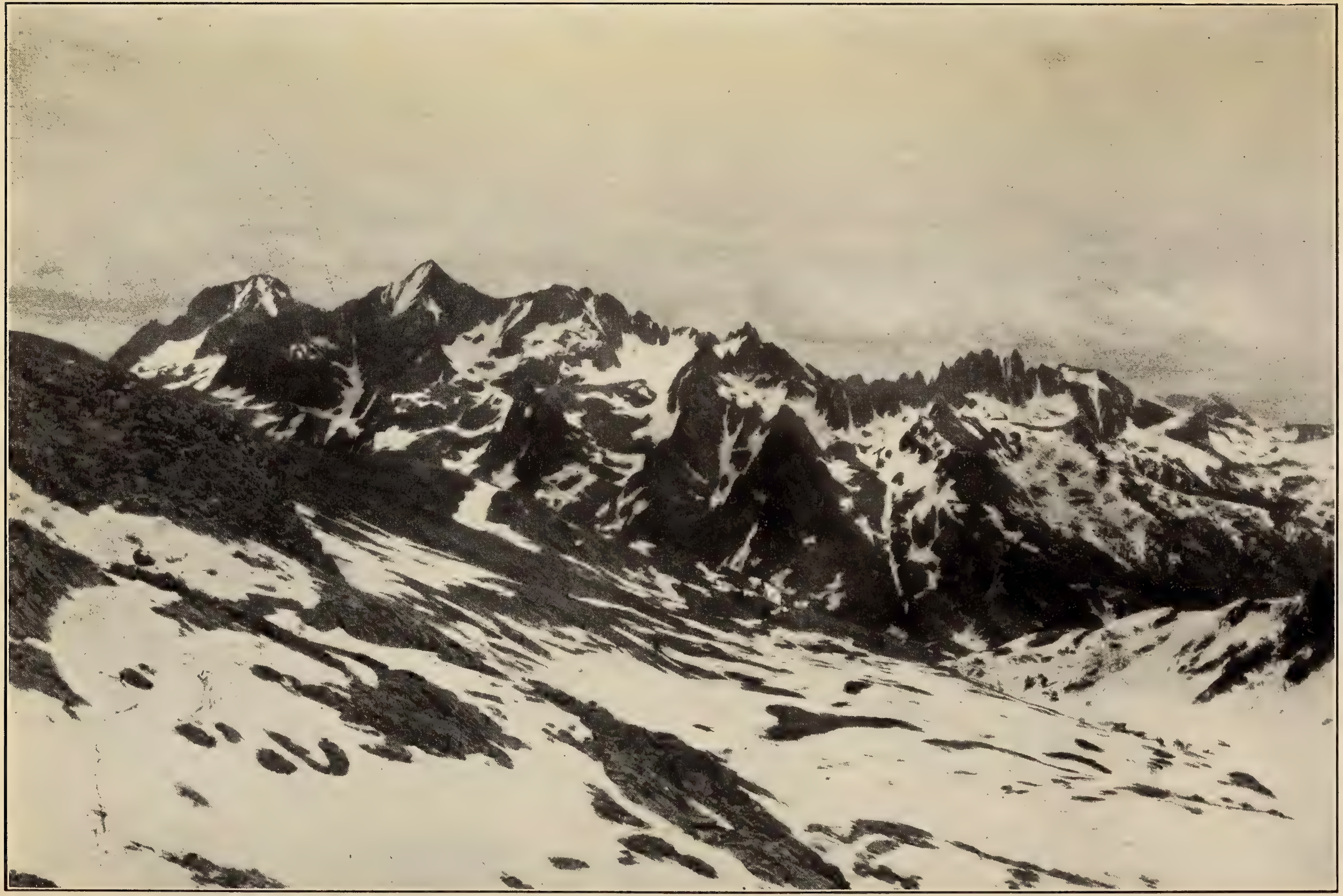
THE MT. RITTER KNAPSACK TRIP.

By Francis M. Fultz.

Late in July seventy of the Sierra Club were camping near Lake Merced, a mountain-hemmed stretch of the Merced River some ten or twelve miles beyond the Yosemite and about three thousand feet higher. They had "hiked" from the main camp at the Tuolumne Meadows over snowfields lying on the ten-thousand-foot pass of Vogelsang and down the cañon of the cataract torrent of McClure's Fork.

For all its altitude, they found the walled-in valley around Lake Merced was summer-land. But the summer-land was bordered by spring, for the mountain walls still wore their crowns of snow, from which everywhere silver streams dropped down in cascades and waterfalls. Beneath the line of snow the bare granite walls glinted in the sunlight, excepting where crack or crevice gave scant opportunity for a dark evergreen to establish its home and where some shelf or gentler slope furnished space for a thin fringe of larger trees. The floor of the valley is timbered. Some places the forest is open, with great yellow pines and balsam firs stretching their crowns high heavenward and having at their feet a carpet of ferns and flowers. Along the streams are dense thickets of young cedars and by the lake a fringe of aspens.

Truly Lake Merced is a glorious place to camp, and the Sierra Club enjoyed it to the utmost. But they were camping on schedule time, and the schedule called for only three days at Merced. There were other scenes to visit. Most of them first returned direct to the main camp at Tuolumne Meadows. But fifteen of the hardier ones, hearing the irresistible call of the mountains, put their beds and five days' provisions on their backs and



RITTER GROUP, FROM THE DIVIDE SOUTH OF FOERSTER MOUNTAIN.
F. M. Fultz, 1907.

started for Mt. Ritter, twenty miles to the eastward. And such a twenty miles! There is not a more glorious stretch on the continent! Now on some pass which is but a little lower than the peaks on either side and from which in every direction are seen piles on piles of mountains, all clothed in white and piercing the skies! Now in some gorge that seems like a titanic rift in the earth's crust! Now on a glacier-planed slope that might well be a giant's toboggan-slide! Again taking an angling course up a snow steep or sliding down one so swiftly that it seemed like flying through space! Then crossing rivers on snow bridges! The joy of it all calls irresistibly, and we long for the mountains again with a feeling akin to homesickness.

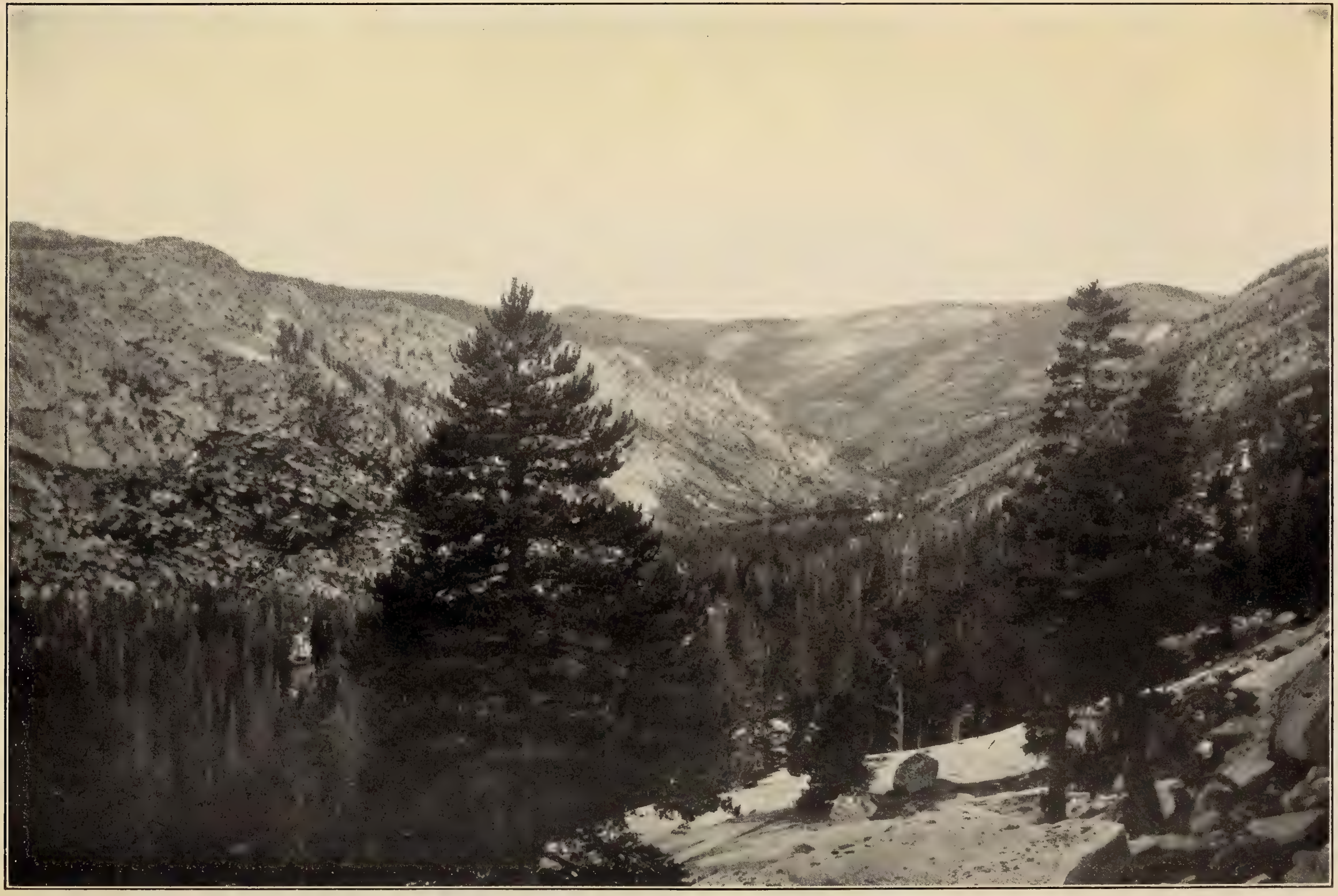
After a leisurely breakfast on the morning of June 23d we left the Merced camp accompanied by nearly all the remainder of the Merced party of seventy, who went along partly to see us off and partly to visit the basin of the Upper Merced a few miles above.

Our packs were collected and sent forward on pack animals, which were to go as far up the gorge as possible and thus relieve us of some of the fatigue of the first day's tramp. Our way lay close to the river on the north side. We followed an old sheep trail, which was so indistinct that in many places we entirely lost it and had to push our way through brush and over broken rock masses which strewed the face of the rather abrupt cliff. The pack animals found the going very difficult and after a couple of miles were finally brought to a full stop by a glacier-polished granite slope that plunged into the river at a steep angle and which was even too smooth and abrupt for man to cross. Here we shouldered our packs and crossed the river on a convenient log bridge. We followed close to the river on the south side as far as Lake Washburn.

Lunch was eaten at the foot of the lake, where the Merced flows out in a clear stream from twenty-five to thirty feet wide and several feet deep. From here our course lay around the south shore of Lake Washburn. There was no trail whatever, and the going was very difficult on account of the great amount of talus and the thick brush. A few of those in the Merced party who had made their way high above the glacier slope which had forced us to cross the river were on the north side of Lake Washburn. Later they joined us above the lake, crossing the river on an old sheep bridge. They reported a fairly easy passage along the north shore of the lake. Undoubtedly, when a trail is built along the river to the basin of the Upper Merced it should follow the north shore of Lake Washburn.

East of Lake Washburn two or three beautiful little meadows were crossed, and some of the party discovered a soda spring, similar to the one in the Tuolumne Meadows. This find was an important one, as the spring will offer an extra attraction and induce travel to the basin of the Upper Merced. We reached the basin about the middle of the afternoon and halted to rest on the south side, just opposite where Triple Peak Fork runs down from the northeast. The basin is a great glacier-polished bowl, the walls of which rise to a varying height from 1,000 to 1,500 feet, down the face of which drop a number of cascades and falls. The most important of these are Triple Peak Falls, with a descent of nearly 1,500 feet, and the falls which drop into the basin from the southeast.

It had been our intention to camp in the basin for the first night; but it being still early in the afternoon, we decided to climb the rim and have the advantage the next morning of starting fresh from that point. We bade good-bye to our companions and took the way to the foot of the Triple Peak Falls. Most of the party crossed the river and climbed the cliff on the north side of the falls, but a few, discovering a cleft running up diagonally on the south side, chose that way. The ascent



LOOKING DOWN UPPER MERCED CAÑON, SHOWING LAKE WASHBURN.
F. M. Fultz, 1907.

was difficult in a few places on account of the smooth surface of the glaciated granite, but there is little danger in the climb on either side of the falls.

From the top of the falls there is an unobstructed outlook down the Merced Valley to a mile or so beyond Lake Washburn, a distance of four or five miles. There was a beautiful view of it as it lay in the full moonlight, and we lingered until the lateness of the night warned us that sleep was needed for the tramp of the morrow. We reluctantly turned from the sparkle of the moonlight on the spray of the falls and were soon buried in sleep beneath the tamarack pines where the camp was made.

We were awakened along in the morning by the patter of heavy raindrops and there was hasty rising and hurrying about to get things under shelter; but it proved a false alarm and in a few minutes the moon was shining again.

We had another glorious view of the Merced Valley as the early morning light crept into it, then shouldered our packs again, turned our faces to the northeast, and followed up to Foerster Creek. Our course lay in this direction for a couple of miles, when we turned to a due east direction. About where our course changed we crossed the Isberg trail at right angles. We might have done so without seeing the trail, if we had not known it should be somewhere about that spot. It is marked by an occasional blaze and a "duck" monument here and there. Just where we crossed it there lay the half of a mule-shoe, another evidence that man sometimes passed this way.

Just beyond the Isberg trail we passed on to the snow-fields, which soon became continuous, and for the next three days the greater part of the tramping was over snow. We were climbing all the time, too, and by the middle of the forenoon were so high up that the whole range south of the Merced stood out,—a great semi-circle of snow, beginning with Clark Peak on the west and extending through Gray, Red, Ottoway, Merced, and Triple Divide to Isberg on the east. It was a magnificent view and one exceeded only by that of the Ritter Range, which we reached a few hours later.

We climbed up the west side of the north extension of the range in which Isberg Peak lies, between Foerster Peak and Long Mountain. It was a hard pull up the snow steep. The surface was deeply pitted and was softening under the warm sun, which made the tramping heavy. But just before noon we reached the summit of the ridge south of Foerster Peak at an altitude of about 11,500 feet.

It was a difficult climb to the top of this ridge, but as our heads rose above its crest there burst upon our sight one of the most magnificent views in this part of the Sierra. Due east of us, six or seven miles in an airline, the Ritter Range, from Banner Mountain on the north to the Minarets on the south, stood out cold and gray against the sky. The San Joaquin Cañon lay between, the crest of the range rising to the height of nearly a mile above its lowest depth. In getting down to the San Joaquin we encountered some of the most ticklish work we found on the whole trip.

We struck the river at the foot of a long series of falls and cascades, where the climb immediately began again. We found the floor of the cañon quite generally covered with snow and the stream spanned here and there by snow bridges, which made it very convenient for us, as we were forced from one side to the other by the wandering of the river.

We knew we were somewhere around the base of Ritter, but were laboring under the difficulty that always happens when one is immediately under the mountain one is looking for,—that of determining which is the right one of a group, all of which are visible.

We learned from a prospector that there was an old sheep trail leading up from the east side of the cañon, so we decided to chance it and began the climb. It was now getting late in the day and we hastened as much as possible, but the fatigue of the long day's tramp was beginning to tell, and it was fully an hour before we reached a little basin at timber line, which here cannot be much below 11,000 feet. When we went into camp dusk was already gathering. While we were busy making camp our leader climbed another five hundred feet to determine, if possible, whether it was really Ritter that was looming above us, but he was forced to return on account of darkness, and we went to sleep that night in uncertainty.

Although the moon was still nearly full, the mountains on the east were so high that deep darkness soon fell on the camp and we had to finish our preparations for the night by the light of the campfire. There was a little creek in the basin which dropped from a high altitude just a short distance back of the camp. In the evening there was quite a large volume of water coming over these falls and the pounding and splashing of the water reminded us of that of the Yosemite Falls, which we heard all night long while in the Yosemite camp. The music of the waterfall lulled us to sleep, but when we were astir again at four in the morning everything was quiet. The creek was only a trickling rill and the snow bank beside the camp was a hard mass of ice. The night was one of the coldest of the whole outing.

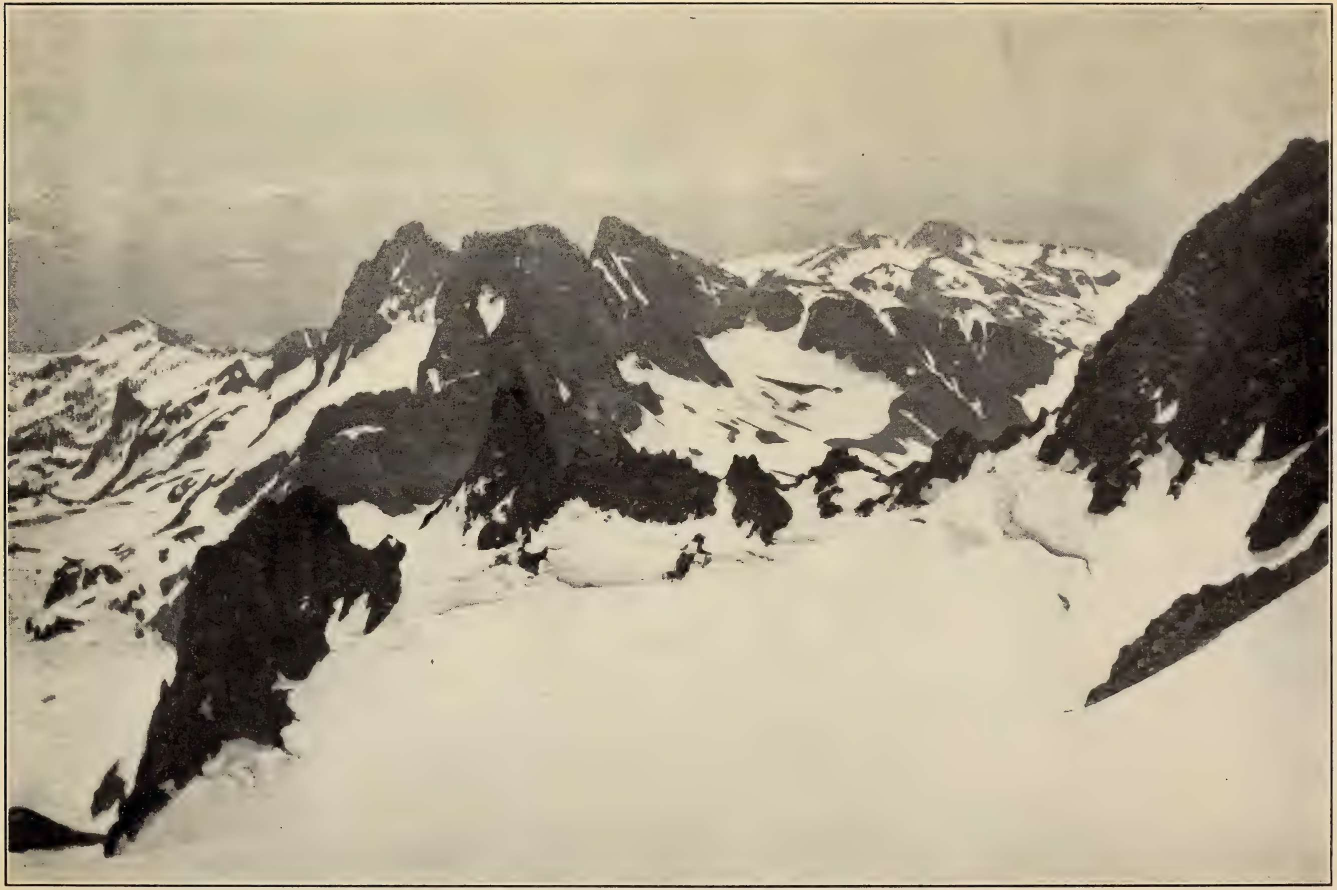
We were away by five. We realized there was a hard day's work ahead of us, but fortunately could not see that it would stretch out to nearly fifteen hours, and that darkness would be falling before we had again picked a camping place for the night.

We were compelled to make a detour to the north in order to surmount the rim of the basin. With reluctance we turned our faces from the direction where we knew Ritter lay. Immediately there was a stiff climb which took away our breath but offered no other particular difficulty. Gaining the top of the cliff we turned to the southward and followed close along its edge. The face of the wall was so nearly perpendicular that frequently we could not see the floor of the basin close along its foot. We passed directly above where we had camped, crossing by one good step the stream which the evening before had furnished so much water for the falls. Here we changed our course to the southeast and began climbing again.

We were not yet certain which of the peaks in front of us was Ritter. As we advanced our doubts became more and more perplexing. We realized that climbing the wrong peak meant lots of unnecessary hard work and the loss of a day's time. By the general contours of the topographic map the mountain in front of us should be Ritter, but the lakes laid down did not exactly correspond to those we found. Finally, deciding that it is always better to determine to a certainty your mountain before climbing it, two of the party were sent to make a reconnaissance to the northeast while the others rested.

With the aid of the map the scouts located Banner Mountain to the north, from which it was easy to determine the position of Ritter. It was a great relief to the whole party when they returned with the report that it was indeed our mountain which loomed above us. With joyous hearts we cached our packs on a convenient ledge, stripped ourselves of all unnecessary weight, and started on the last fifteen hundred feet of the climb.

We crossed a lake still hidden by many feet of snow, excepting along one margin where the ice had parted from the shore and where gleamed a long, thin crescent of brilliant turquoise blue. Beyond the lake we climbed a snow-buried ridge and passed into a cirque, at the bottom of which there must be true glacier ice. This cirque lies due west of Ritter and receives the snow which moves down its slope on that side. Looking southward



GLACIER ON THE SOUTHEAST SLOPE OF MT. RITTER, THE BERGSCHRUND SHOWING ON THE OPPOSITE SIDE.
F. M. Fultz, 1907.

from where we entered the cirque the upper slope of the range bordering the east side of the San Joaquin Cañon looked like the snow-clad roof of a giant's house.. The slope leading from Ritter down into the cirque is trough-like and is twice broken by transverse ledges which extend part of the way across and which undoubtedly indicate the location of dikes.

To avoid losing the elevation we had already made we kept at a high contour on the north side of the cirque and gained the first of the two ledges above mentioned. From here we struck straight up the snowfield to the second ledge. This snow steep was of unusual difficulty, each pit merging into the one next below, until the surface became a succession of gutters approaching two feet in depth, with knife-like ridges between. To add to the difficulty, being on the west side of the mountain, until after midday the snow remained frozen as hard as ice.

We gathered on the second ledge and scanned the mountain wall, which surrounded the head of the snowfield, for a vulnerable point of attack. On our right the snow seemed to extend well up to the top of the ridge, but the way looked long and toilsome. Directly in front, not more than two hundred yards away, the snow ended and the rock crags rose nearly perpendicularly. Ordinarily we should have shunned such crags, but they "looked good" to us just then after the terrific work on the snow. A series of chimneys which split the crags made the prospect doubly alluring.

As the snow steep which lay between was extra hazardous, before taking the whole party up, our leader, followed by two others at distances apart, made an exploring trip. But the chimneys beat them back with the loss of nearly two hours, and we were forced to try the snowfield again. Steps were cut across the snow steep to some crags on the south, up which we climbed by some hand-over-hand work to the ridge which led directly to the top. A practicable route having once been discovered, there was no further delay, and shortly after one o'clock all the party were on the summit.

The day was fairly clear and the mountain in all directions stood out distinctly. But the haze hung over the desert and the bordering mountains were tinged with purple. In the northwest clouds overhung Mts. Lyell and McClure and Rodgers Peak, but from time to time they stood out distinctly. Banner Mountain, just to the north, appeared so close that it seemed as if one could reach it at a leap. Three or four miles southward the Minarets thrust into the sky their pinnacles, their flanks on the north and east clothed in white, while to the east and south of them lay piles on piles of mountains extending until the horizon and the clouds shut out the view.

To the westward we looked across the San Joaquin Cañon, through whose deep recesses we had so lately come, to the range we had crossed the day before, and from which, in plain view, rose Electra, Foerster, Long and Isberg peaks. We could pick out the very spot where we had stopped to rest and satiate our souls with the glorious view.

The glacier on the southeast slope of Ritter was deeply covered with snow, which showed, however, the concentric lines indicating the direction of the downward movement. From our elevated position the bergschrund on the opposite side showed distinctly.

About three o'clock we took a last look at the panorama of mountains and started down. The snow steeps, which caused us so much trouble in the ascent, had softened under the westering sun and there was some glorious coasting. Strenuous and exciting was some of it, too, on account of the steepness and the deep pits and gullies. All landed safely, however, on the snow-covered lake at the bottom of the slope. Picking up our packs, we started on our return to the Tuolumne camp. It was the intention to spend the night at Thousand Island Lake, some three or four miles north.

Around the lake we found everything covered with snow. There was scarcely a bare rock big enough for a single bed, and certainly not one that had a soft side. Although it was now five o'clock we decided to push on over Island Pass into Rush Creek basin, a distance of four or five miles. At Thousand Island Lake there was a small cache of provisions which the other Ritter party had left for us a few days before.

The snowfield continued all the way over Island Pass, and being deeply cupped and soft it made the way seem doubly long. There was a general sigh of relief when we reached the summit of the pass and began the descent. A mile farther on we made camp, but it was now so late that darkness fell before we had supper prepared.

Although it was in the last week in July, Rush Creek Basin was still pretty generally covered with snow. We found a camping-place, however, on some granite ledges along a small creek a mile or so above the main stream.

The next morning the going was very hard. There was a stretch of four or five miles of nearly unbroken snow, the surface of which was deeply cupped and pitted. Being on the east slope it soon softened under the sun, and the steady ascent and heavy snow together made the tramp the most toilsome and wearysome of the whole trip. Though we were fresh from a night's rest we were compelled to make frequent halts. It was about ten o'clock when we reached the top of Donohue Pass and began the descent into Lyell Cañon. A mile below the pass, while seven of the party continued on into the Tuolumne camp, arriving there early in the afternoon, five turned aside and climbed Mt. Lyell, thus accomplishing the unusual feat of ascending Mt. Ritter one day and Mt. Lyell on the day following.

Thus ended the Ritter trip, the first of the knapsack trips of the 1907 Outing. That it was successful in every way is not saying too much. There was much toil and some discomfort, it is true, but these were far out-weighed by the magnificence of the scene, the glory of the surroundings and the sense of freedom from world-care. There is not one of us who would not again toil up the Foerster Ridge to view

> The cold, gray range where Ritter keeps
> Eternal watch and ward:
> Whose crest is piled with granite heaps,
> Whose flanks are wrapt in snowy steeps,
> Adown whose gulch the glacier creeps,—
> Sublime, majestic guard!

A KNAPSACK TRIP TO MT. RITTER.

By Marion Randall Parsons.

In a paper on the Tuolumne and Merced cañons in the Bulletin of January, 1908, our knapsack party to Mount Ritter was unceremoniously left standing at the dividing of the ways. The moment had not the importance for us that this dwelling upon it gives. Indeed, by most of us the old, half-obliterated trail was hardly noticed at all except as almost unbelievable evidence that other human beings had passed before us into this wild and lonely region. So with but a brief pause for comment we crossed the trail and turned our steps in an easterly direction.

The open, rather barren country with its scanty covering of tamaracks soon gave way to snowfields, growing ever wider and steeper until the end of three hours' climbing, of which the loose snow and our heavy packs made difficult work, found us two thousand feet above timber line on a rocky pass south of Foerster Peak. Behind us lay great snowfields stretching downward to a country of little lakes not yet free from their wintry covering. Farther away, to the west and south, beyond the green, forested cañons, was a circle of great peaks, Clark, Red, and Gray peaks, Merced and Isberg,—a splendid outlook, but one that seemed almost insignificant in comparison with the view to eastward. For there we looked down the snowy reaches of Bench Cañon and across the dark line of the San Joaquin gorge to a massive group of black, jagged peaks, Banner, Ritter, and the Minarets, even more beautiful in outline than as seen from Lyell. Heavy clouds overshadowing the whole group added to the cruel, threatening mien Ritter always wears, and it seemed a foolhardy thing, almost an impertinence, for pigmies like ourselves to think of scaling its walls.

The intervening country, spread maplike before us, gave no promise of easier traveling, so we hastened to leave the pass and plunge down Bench Cañon towards the north fork of the San Joaquin. The snow was very soft, making the descent almost as tedious as the ascent. Our course to the river proved to be unexpectedly open, though in one place a treacherous cliff made life seem uncommonly interesting to a couple of pilgrims who strayed off the narrow path of easiest descent; but with no very serious difficulty we at last reached the San Joaquin. This is a beautiful cañon, whose dark, reddish walls, rising to a height of four thousand feet, give a wonderful impression of wild, rugged grandeur. Crossing the river on a snow bridge we made our way up its eastern bank. The cañon is little frequented and we believed ourselves the first to have entered it that season until, a mile or so above our crossing, we came upon a group of burros pensively sunning themselves on a snowbank, where the winged pests of the meadows were less troublesome. Soon afterwards we found a camp tenanted by one man, a member of a prospecting party which had been at work on a copper claim, high above us on the walls of the Minaret group since April.

It had been a long, hard day, the hardest that one weary pilgrim had ever undertaken, for we had climbed to an altitude of over eleven thousand feet with our packs on our shoulders besides traversing fifteen miles of the roughest kind of country. So this bright campfire looked particularly inviting. The cañon was narrowing; the high, rocky walls appeared bare of any vegetation, and to the last straggler this seemed to be the logical place to call a halt. But our inexorable leader lifted his eyes to the head of the cañon, where the peak of Ritter showed, pointed to a bench beside a watercourse nearly a thousand feet above us, where a single tuft of green appeared, and announced that there we would camp. With rebellion in her heart, but, true to principles, still obedient, silently and doggedly the last pilgrim resumed her pack and trudged along after him. As she climbed slowly and reluctantly out of that cheerful valley she felt in her bones that the long-trusted judgment of her heretofore reliable leader was at last going to be proved at fault. No reasonable being could expect to find wood, shelter, or anything but snow and bitter winds in the high, bleak resting-place he had selected.

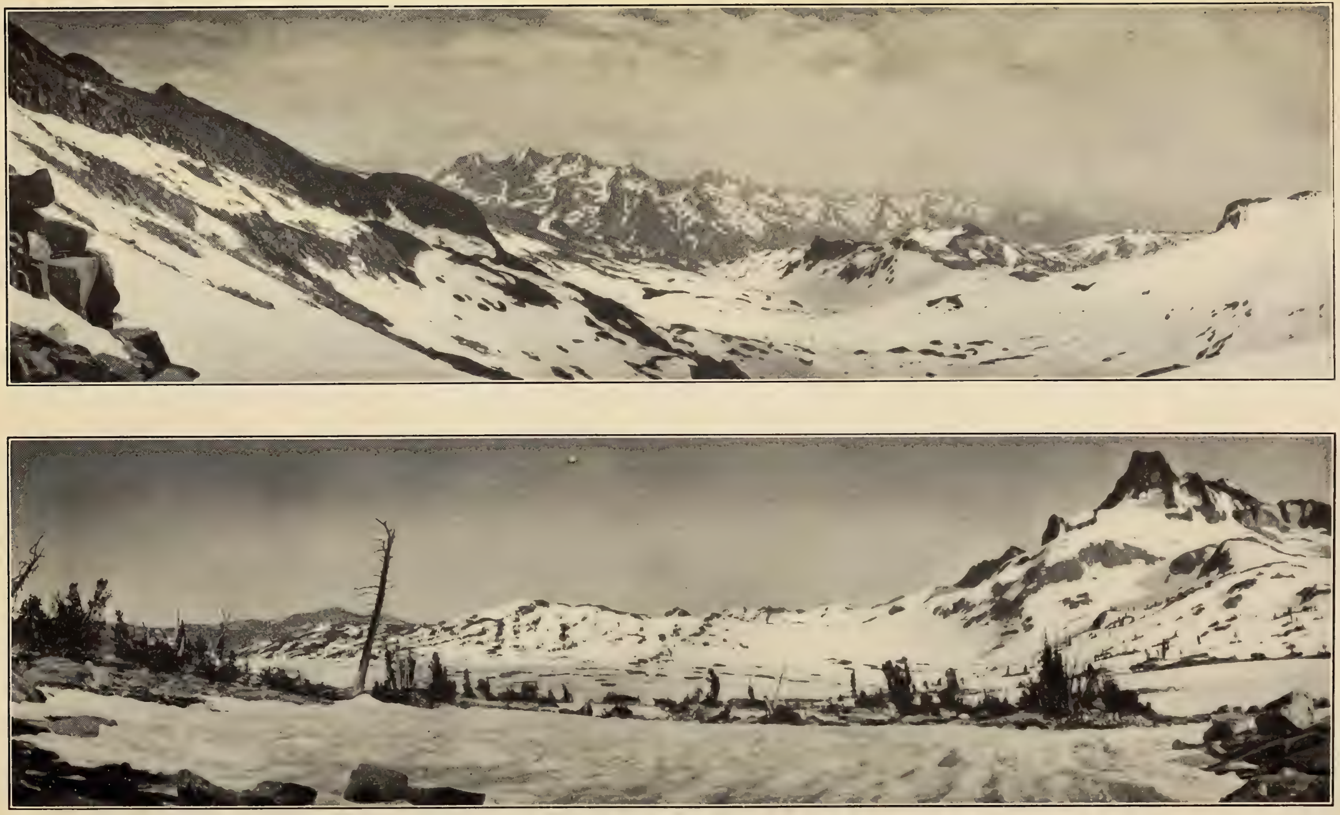
Among the many joys of a knapsack day there is one black hour,—that cold, dismal hour before dinner, when the campfires have not yet blazed up to the comfort of overheated backs and snow-soaked feet; when one is hungry, dirty, and tired, and when one's unvoiced conviction that the camp-site mentally picked out a few miles back on the trail was the proper end to the day's toil is confirmed by a hundred fancied shortcomings in the chosen spot. At the first glimpse there was little to lighten the gloom of that hour,—a narrow, rocky bench scarcely a hundred feet wide, a few juniper trees, a stream just broken out from the ice, and an enormous, dreary expanse of snowfield rising from our feet to the very skyline. But with the lifting of the ante-dinner mood the last pilgrim was grudgingly forced to admit that the leader had been provokingly right, as usual, and that a camp boasting the shelter of living trees, an abundance of dry wood, a stream of water, and luxurious beds of bryanthus was equal to the marshy charms of the cañon bottom.

Surely no camp could have been more beautiful. The long, twilit cañon lay below us under the darkening sky; close beside us rose the towering mass of Ritter, whose rippled snowfields were radiant with the sunset glow long after it had faded from all else but a band of light clouds floating above it. As the gray shadows crept up from the cañons towards the mountain top they were met by the rising moon and driven back into the hollows again, and clouds and snow the whole night through shone in the still, cold radiance of the moonlight.

Never did mountain climber rise with less enthusiasm to the conquest of a peak than did the last pilgrim next morning. Had there not come, to spur lagging muscles to further achievement, the bitter memory of a morning three years past, when feminine aspirations toward that very mountain were crushed by the stern masculine decree that fair ladies' backs were not fitted to bear burdens, black Ritter, with shame she confesses it, would still be unscaled by her.

However, she gritted her teeth and shouldered her pack and with the others worked up the cliff that walled our camp on the north to a snowfield which led us to a little glacial lake lying close under the peak of Ritter. Here the packs were cached during a short halt called for the purpose of reconnoitering. Passing the lake on the western side, we climbed to a higher basin to the south, where lay another lake; thence starting up the great snowfield that covered half the mountain-side, we made for a rocky ledge midway between the lake and the threatening cliffs that topped the snowfield. From this place, leaving most of us to rest on the rocks, a scouting party went onward to investigate what chance the cliffs might offer for an ascent.

Above us the snow, besides being very steep, grew exceedingly hard, for, as we were on the southwestern side of the mountain, the sun had not as yet touched us. We had neither an alpenstock nor an ice-axe in the party; even the hobnails in our shoes were worn rather smooth with the rock-climbing of the last few days, and the frozen surface offered a very precarious foothold. The cliff proved inaccessible and the men who had with such difficulty made their way to its base were now confronted with the much graver problem of a return. Indeed, their danger was much greater than we from



VIEWS ON MT. RITTER TRIP, 1907.

below could realize except as we saw it reflected on their faces when they at length reached us. A single slip might easily have been fatal, as one falling would almost inevitably have been dashed into one of the numerous rock-piles that were scattered over the snowfield.

A scout now beckoned to us from a point of rocks far to the right. By energetically kicking steps in the snow we worked across its steep face almost on a level to the lower end of the point. An hour's climbing over rocks, sometimes firm, but oftener loose and ready at a touch to become dislodged, brought us to the saddle overlooking the upper portion of the glacier lying between Ritter and Banner. Thenceforward the way was plain,—across the snowfield and up the rocky pinnacle to the summit.

The ascent of this peak of dread reputation, which, taken from the north, involves one of the most difficult climbs in the Sierra, had from this southwestern approach proved almost disappointingly simple; but the outlook from the summit brought ample compensation for any thrills the climb might lack. For an hour we rested there in the noon sunshine, turning our gaze now northward past the dark mass of Banner Peak along the dazzling white crest of the range, or down the wooded stream bottoms to the desert's brown heat, where lay the shimmering Mono Lake; now eastward or southward, where countless chains of snowy peaks, countless wrinkles of green, hazy cañons stretched farther and farther away to meet the dim horizon line; but oftenest, perhaps, westward, tracing the toilsome way our feet had followed across the range from the hidden Merced Basin, or farther yet to the gray Half Dome, in whose shadow our summer wanderings had begun.

A mysterious atmosphere, not quite of the everyday world, surrounds the loftiest mountain tops. The high, clear air that blows across them is as a breath from the inner sanctuary, the holy of holies, of the great temple of out-of-doors. It is peaceful, restful, serene; and yet every crest and pinnacle within the broad horizon thrills one with a call to further effort, with a vague unrest like the rainbow lure or the voice of the sea.

But our day's work was still far from done and all too soon we had to turn our thoughts to earthly things. A leisurely enjoyment of luncheon brought our siesta to a close, and with a wonderful renewal of vigor we started down the mountain. A slide or two in the now soft snow helped to preserve the buoyancy in us till our packs were reached, even if after resuming them dark thoughts of the weary miles separating us from camp would intrude.

We turned northward, skirting the lake which lies at the base of Banner Peak, and crossing the low divide that leads down by an easy descent into the basin of Thousand Island Lake. Here we had expected to camp, but the frozen lake and the deep snow about its banks offered such cold hospitality that there was nothing to do but trudge on across Island Pass and down to Rush Creek.

With this camp among the tamaracks and the snowbanks, where a great white range walled us from the green Tuolumne Meadows, this account of the knapsack party properly ends, for here next morning we separated, returning to camp in three divisions and in such season as our inclination (or our misadventures) dictated. The story of the climb of Lyell via Donohue Pass, of the fishing along the Tuolumne, or of the luckless three who, belated by a snowblind companion, spent a lonesome night on Lyell Creek, cheered with chocolate, tea, and mush salted with corned beef, belongs rather to the province of personal anecdote than to the general history of this most delightful week.

THE MERCED RIVER THROUGH THE VALLEY.

THE YOSEMITE WATERS.*

By Harriet Monroe.

The beauty of falling waters is like the beauty of birds—delicate, musical, swift of flight and brilliant with many colors. It is like the fragile, laboriously wrought beauty of lace, weaving fantastic patterns out of invisible threads. Like the soft white beauty of snow it is, flaking, drifting, draping the rocks, turning to blue and green and lilac in the sparkle of the sun. It is like the beauty of armies—yes, like the beauty of armies is the beauty of falling waters, of armies that march to victory, shouting and waving banners, and booming their haughty guns. It is like the beauty of the will of God—joyous, not to be questioned, working for its own.

And falling waters have many souls, and none shall gainsay the least of them. Souls of laughing and of weeping have they, of motion and of rest; souls that cry out and others that are still.

Like a flower is the soul of Bridal Veil, like a white lily nodding in the wind. Now the north wind finds her, and tenderly, appealingly, she leans as for succor unto the granite wall; now the south wind seeks her, and she spreads out her filmy robes like a dancer and strews the air with her whiteness. Lovely she is, and her voice is soft, and her breath is sweet and fine like the faint scent of azaleas. With light touches she strokes the mountain and he gives her of himself; yet, though he woo her for a million years, for him she will never change.

And Illilouette flutters like a ribbon in the wind as she picks her difficult way over the steep black rocks. Glad she is with the gladness of a child, careless of danger, waving her hand in the sun. I see the gleam of her teeth as she laughs; I see her slim white limbs and the ripple of her long bright hair. She runs with swift feet; she pauses not; she wins her way to her playfellow, the river, who lifts her daintily over the rocks and carries her far, far, through the resisting mountains.

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And Yosemite is a poet in a dream, a poet questioning the sky. Tall as a moonbeam, slim as a reed, swayed to and fro by the drift of his dream, he poises light white feet on the heavy earth and crowns his brow with the blue. His dream is of all beautiful things; of moony nights and flowers a-film with dew, of rainbows that sparkle with many colors, of the blue-veined arms of happy maids; even of the beauty of sadness dreams he, of lovers separated forever, of death hushing the voices of little children. Always in his house of light and mist he listens and sings and sighs, and holds the secret in his heart; that none may dream his dream, nor tell his tale of the beauty of it.

And Nevada, haughty Nevada, is a warrior queen whose soul love takes unaware. She goes forth armed for battle; of silver is her breastplate, of silver and jewels her helmet, and her right hand carries a spear. But suddenly she hears a voice and turns; she gazes, and the heart of her is changed. She catches up filmy draperies and robes herself like a bride; she shouts with new joy, she leaps to her cataract lover on the path of the winds. And down in his green gorge he clasps her close and bears her singing onward. Stern and tall and straight is Vernal, her shining round-armed lover; robed in whitest sparkle of white, beautiful and strong. In him the soul of falling waters is a hero, proud of his triumph. He heaps up Happy Isles for his beloved, and films their flowers with his breath. He hews out the earth to build them; he hurls the rocks from his path and commands the mountain to make way. And all the immovable things hearken and obey, for the will of falling waters none shall gainsay.

VERNAL FALLS.

They have carved the mountains, these soft caressing fingers of falling waters, these delicate foamy touches on the stubborn rock.

They have carved the mountains and cut them through with gorges, and adorned them with rich embroideries of green. For them El Capitan rears his snow-white head to the sun; for them Dome and Half-dome pillar the sky. For them the great sequoias gather the years together on the valley floor and shake their lofty heads at time. For them the pink azaleas pattern the woods in June and all the little mountain flowers dip their brows in dew.

Beautiful as love in its hope is the beauty of falling waters; strong as love in its triumph is their strength. They wait and sparkle and are still—as light as thistledown, as soft as air. They gather the plumes of an hundred battles, they sweep on with the passion of peopled worlds. And life is a bubble in the foam of them; it shall burst in the sun and vanish, and the beauty of falling waters shall reck not that it is gone.

YOSEMITE VALLEY, July 4, 1904.

SNOWFALL IN THE SIERRA NEVADA.

By Joseph N. Le Conte.

The pleasure of camp life in the High Sierra in the early summer, at about the time of our Annual Outings, is largely influenced by the snowfall of the winter immediately preceding. If the snowfall has been heavy, and particularly if in addition it has been late, we are certain to be troubled by high water in the rivers, deep snow on the passes, and lack of feed for our animals in the alpine meadows of the highest Sierra. Similarly the danger of the mountain ascents is largely affected by the state of the snow on the peaks. So widely do different summers vary in this regard, and so important to the traveler is the state of this summer snow, that many trips through the higher parts of the range cannot be attempted at all until the melting has progressed to a certain stage.

With the hope of aiding the future traveler in the Sierra, the writer has collected the data on snowfall, and also on the rate of melting of snow on the ground at a single station in the Sierra for the past eleven years, and has attempted to show the relation between these and the difficulty of summer travel. The results are, of course, rather unreliable, but enough is brought out, it is hoped, to be of some assistance.

The station chosen is "Summit," on the Central Pacific Railroad, elevation 7,000 feet. This is taken as being the highest point at which a continuous record of snowfall and snow on the ground has been kept for a number of years past by the railroad company and later by the U. S. Weather Bureau. Although rather too far north to give the best data for the High Sierra, it will still serve as a general guide. The data herein given has been collected from the files of the Weather Bureau through the kindness of Professor A. G. McAdie.

The amount of snow remaining in the mountains during the summer is determined by three factors: 1. The total snowfall on precipitation; 2. The distribution of the snowfall with respect to time; 3. The temperature or general weather conditions during the melting period.

If we are attempting at the end of spring to predict the state of the snow for the coming summer months, the third factor must of necessity be ignored, as it depends on events which are yet to come and of which we have no knowledge. The first and second factors, however, are pretty well known by the middle of April or the first of May, and we may use them as a basis for a rough "forecast."

The total snowfall in the Sierra at Summit Station is given in the following table:—

TOTAL SNOWFALL AT SUMMIT STATION, C. P. R. R.

Elevation 7,000 feet; latitude, 39° 19′ N.; longitude, 120° 20′ W.

Winter of	*Snowfall in Inches.*	*Winter of*	*Snowfall in Inches.*
1870-71	300	1889-90	776
1871-72	550	1890-91	331
1872-73	334	1891-92	380
1873-74	200	1892-93	634
1874-75	284	1893-94	511
1875-76	525	1894-95	685
1876-77	178	1895-96	544
1877-78	341	1896-97	560
1878-79	445	1897-98	262
1879-80	775	1898-99	480
1880-81	154	1899-00	406
1881-82	391	1900-01	363
1882-83	299	1901-02	391
1883-84	481	1902-03	395
1884-85	202	1903-04	—
1885-86	462	1904-05	368
1886-87	422	1905-06	418
1887-88	345	1906-07	626
1888-89	261	1907-08	330

It will be noticed that 1880 and 1890 were the years of heaviest snowfall during this period, amounting to nearly

65 feet. Eighteen hundred and eighty-one shows the least snowfall (154 inches, or nearly 13 feet), but 1877, with 178 inches, and 1874, with 200 inches, are nearly as low. Of late years, 1898 has been the driest.

Unfortunately the amount of summer snow does not depend entirely on the winter snowfall, but primarily upon the amount remaining on the ground at the end of spring, or after the heavy storms have ceased. The following eleven plats show record of snow on the ground at Summit Station from 1897-98 to the present year, with the exception of 1900-01. All records previous to these were in the office of the Chief Engineer of the Southern Pacific Railroad, and were destroyed by the San Francisco fire. It will be noticed that each of these consist of an extremely irregular curve up to March, the high "peaks" representing, of course, storms. After the month of March, however, there is a fairly smooth curve of melting, for the reason that no violent storms occur after that date. By averaging up the curves of ten years, we get the curve shown on the last plat, which gives the mean depth of snow on the ground at Summit Station during that period. This curve is quite regular throughout, rising gradually to a maximum of 129 inches on March 26th. The portion in which we are the most interested is the descending portion A D, or curve of mean rate of melting. If we average the depth of snow by simply taking the sum of such snow as is on the ground at a given date and dividing by ten, filling in with zeros such years as may have bare ground at the date in question, we get the curve A B C D. This curve will evidently extend as far as the latest date at which we find snow in the record, viz., July 14th (1907). This does not give the correct rate of melting, however, beyond the date where the first curve touches zero, viz., April 23 (1898). In order to get the curve showing the true rate of melting we must find the average date at which snow is of a certain depth. For example, we find that the mean date at which all snow is off the ground at Summit is May 26th. The mean date at which it is 20 inches deep is May 10th, etc. In this way we complete our curve along A B E F G, and throwing out small irregularities, may call the smooth curve I H G, the mean curve of melting at Summit Station. It will be borne in mind that this curve includes the light snowstorms of April and May. We may now compare our mean curve of melting with actual curve of any given year. If the actual curve falls below the mean for the most part, the season is a dry one,—that is to say, the rivers will be low and traveling easy in July. If, on the contrary, the actual curve of melting falls far above the mean, the snow will lie long in the mountains and the floods will come late. It is not necessary to have the entire curve of melting in order to make a very fair prediction of the state of the coming summer with respect to the mean of the past ten years. By the first of May enough of the curve of melting can be platted to show the general trend, and any late storms give rise to very light snow, which goes off rapidly. For example, it may be said of the summer of 1908 that it will be slightly below the average in snow, even though the snow on the ground at Summit now* is above the normal.

It remains to be seen what constitutes a normal snow depth in summer. It will be seen that the summer of 1902 follows almost exactly the mean curve of melting. So also does the summer of 1903. Those who visited the King's and Kern river cañons during those years will have a general idea of the amount of snow found there in July. Granite Basin on the Middle-South Fork divide was free of snow on July 15th. The basin at the head of Kern River was free of snow July 1st. The Troga Road between Yosemite and Lake Tenaya was free of snow before July 1st.

The record of snow on the ground at Summit Station can be found each day in the Weather Bureau's Report in the morning papers. Anyone interested in summer travel in the High Sierra can easily plat these values from day to day and compare the results with the curve of mean melting as given above.

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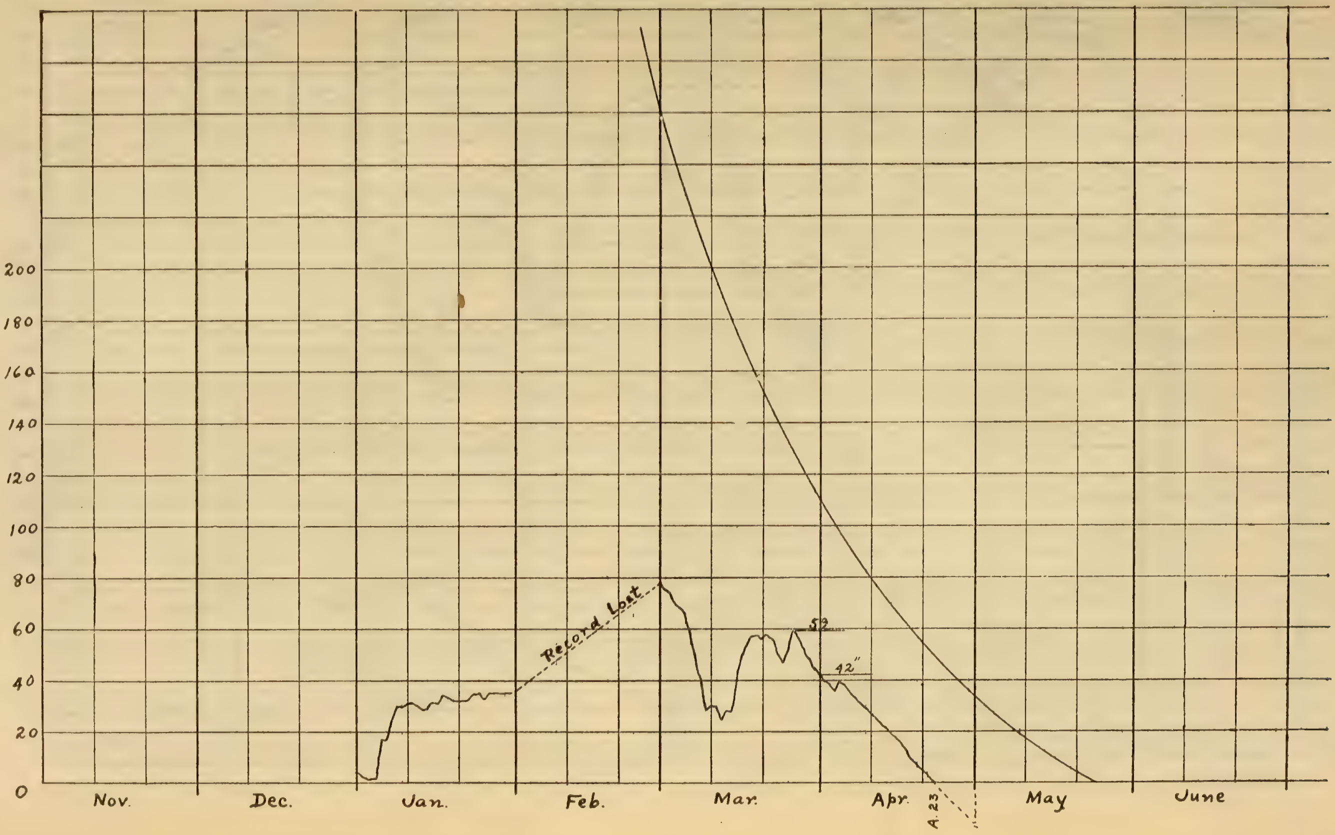
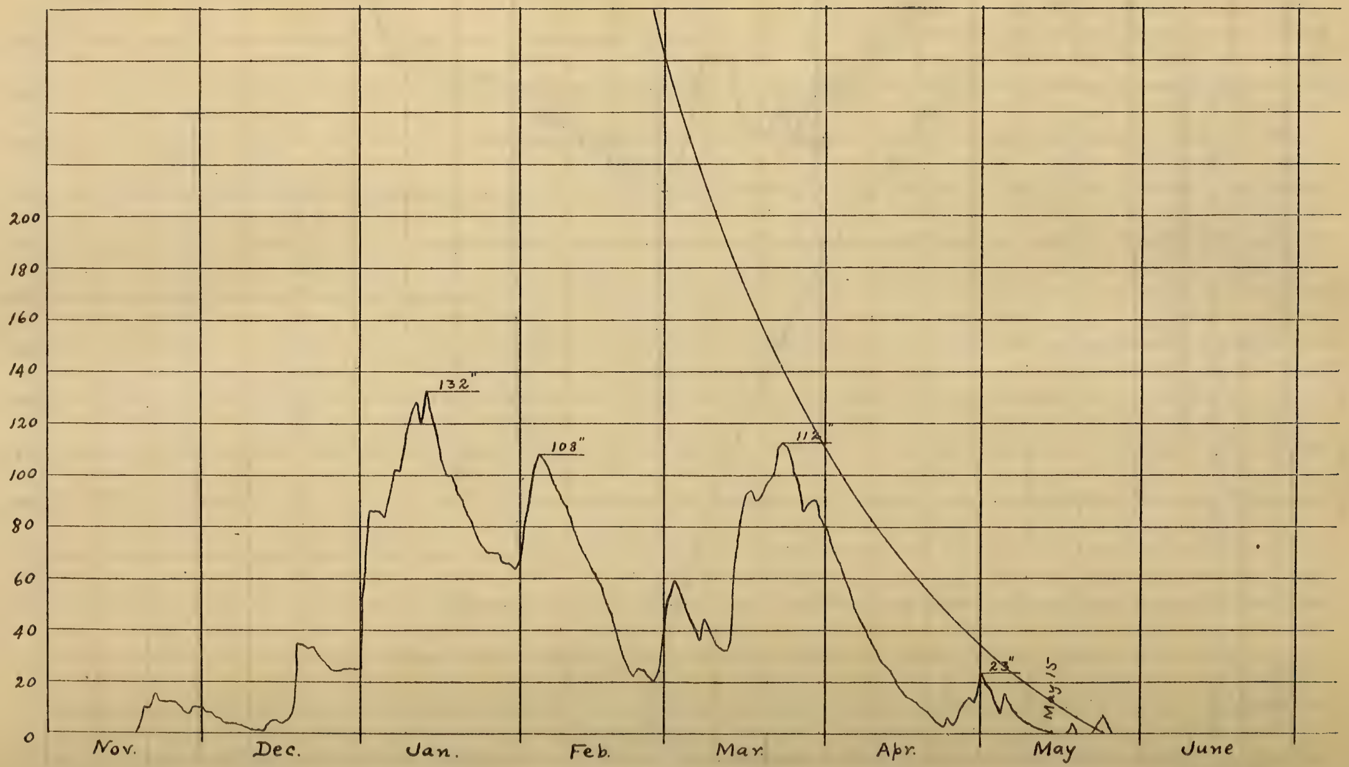
* June 1, 1908.

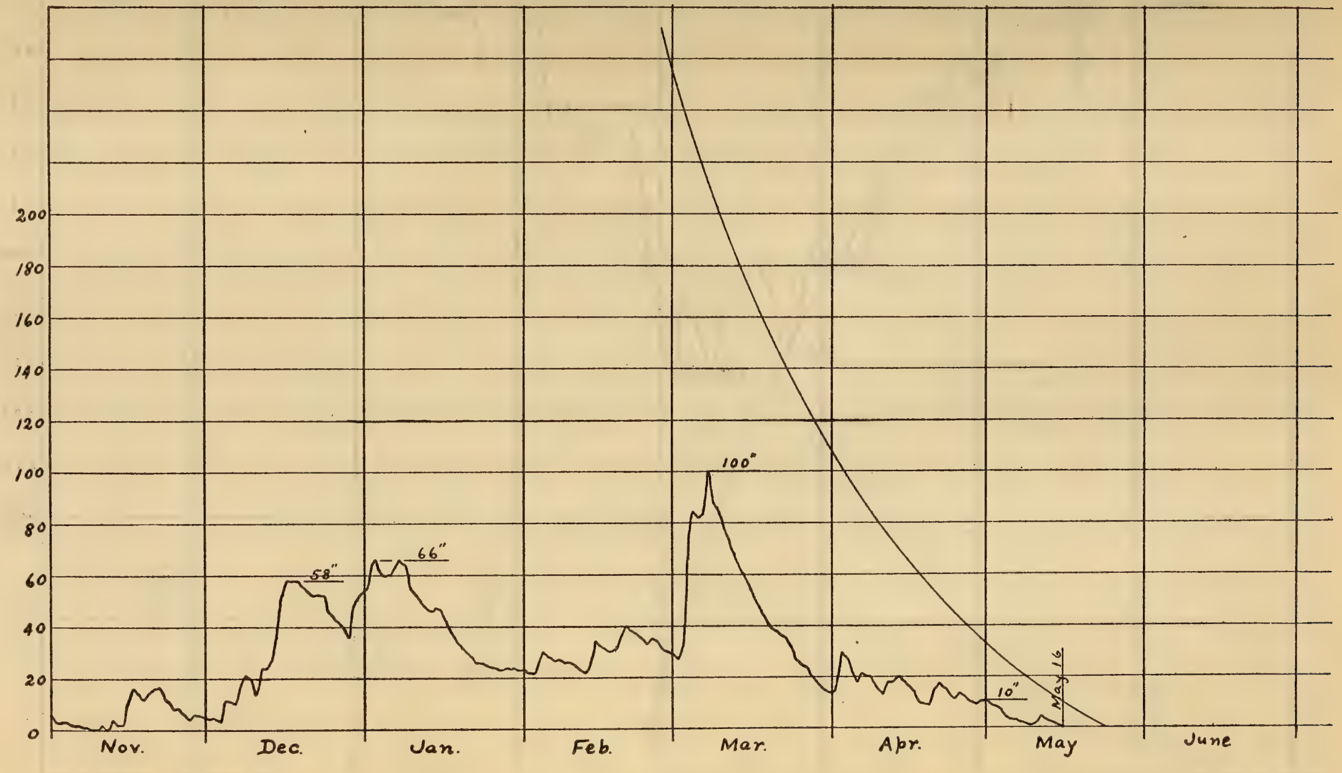
1897-1898.


200
180
160
140
120
100
80
60
40
20
0
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
Record Lost
59
42"
A.23

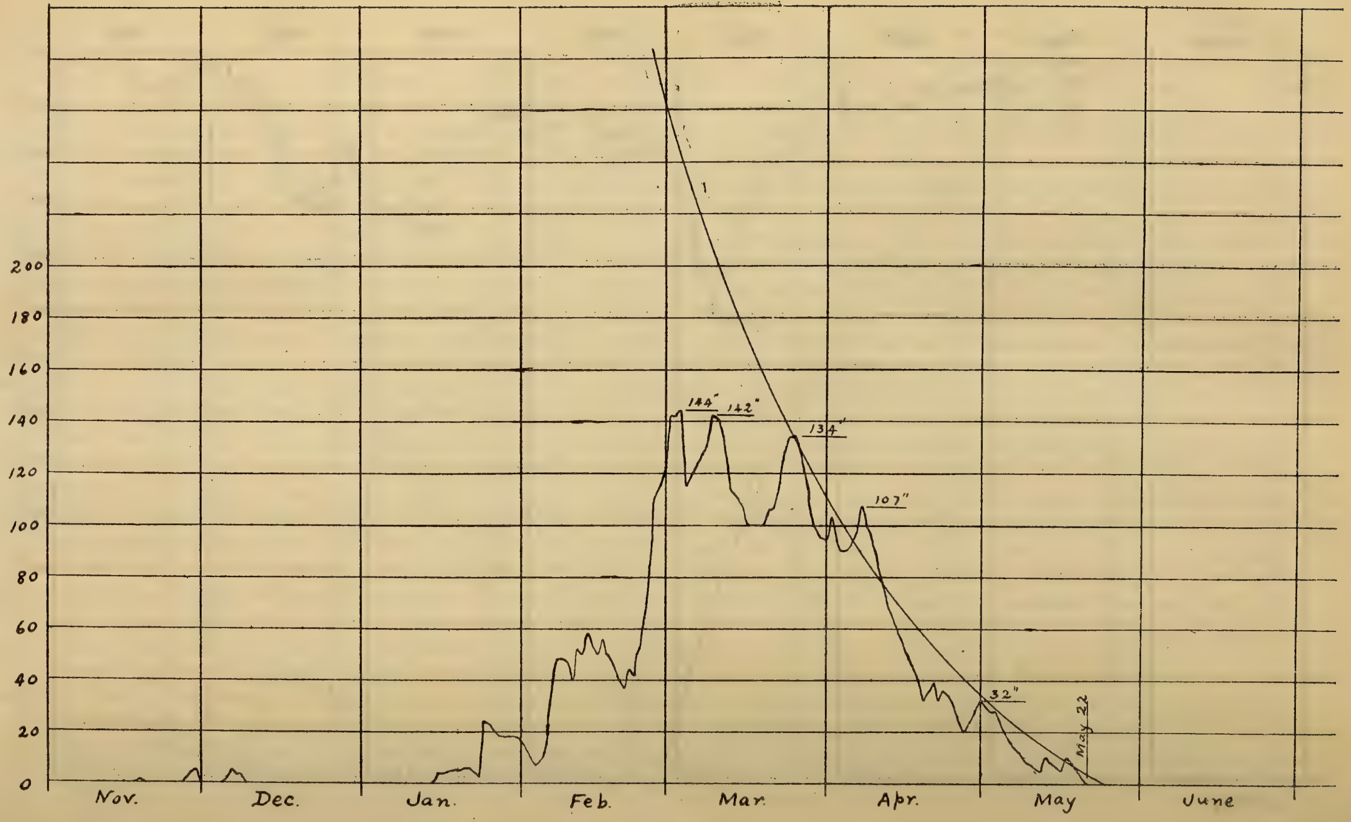
1898-1899.


200
180
160
140
120
100
80
60
40
20
0
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
132"
108"
112"
23"
May 15

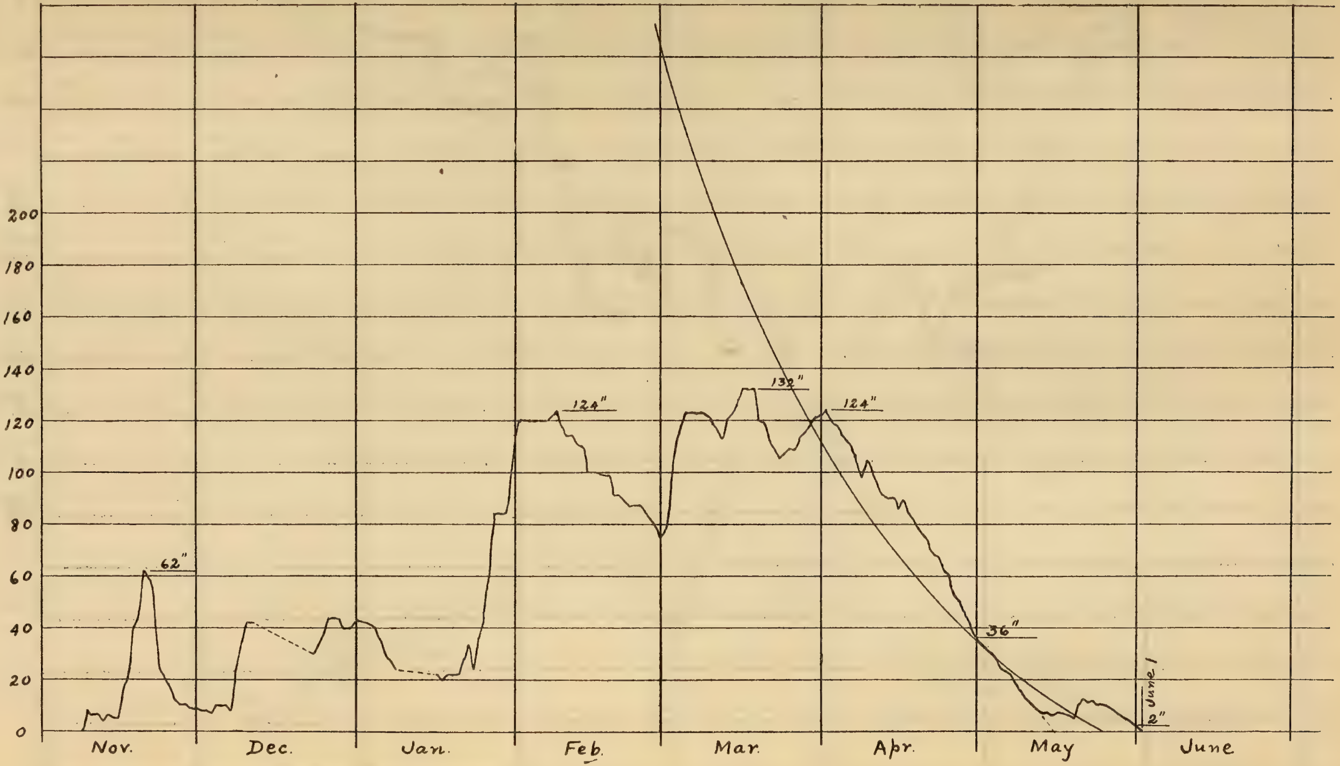
1899-1900.


200
180
160
140
120
100
80
60
40
20
0
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
58"
66"
100"
10"
May 16

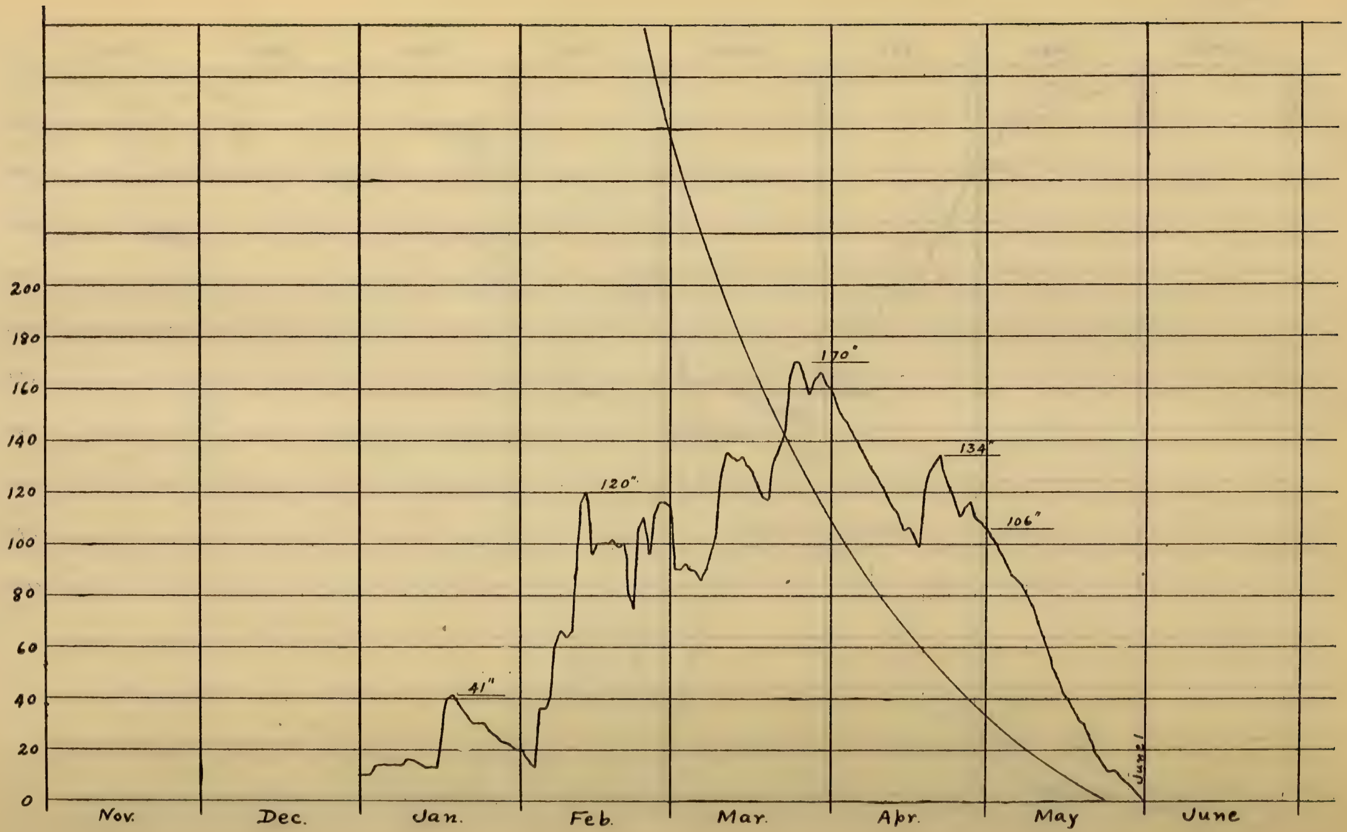
1901-1902.


200
180
160
140
120
100
80
60
40
20
0
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
144"
142"
134"
107"
32"
May 22

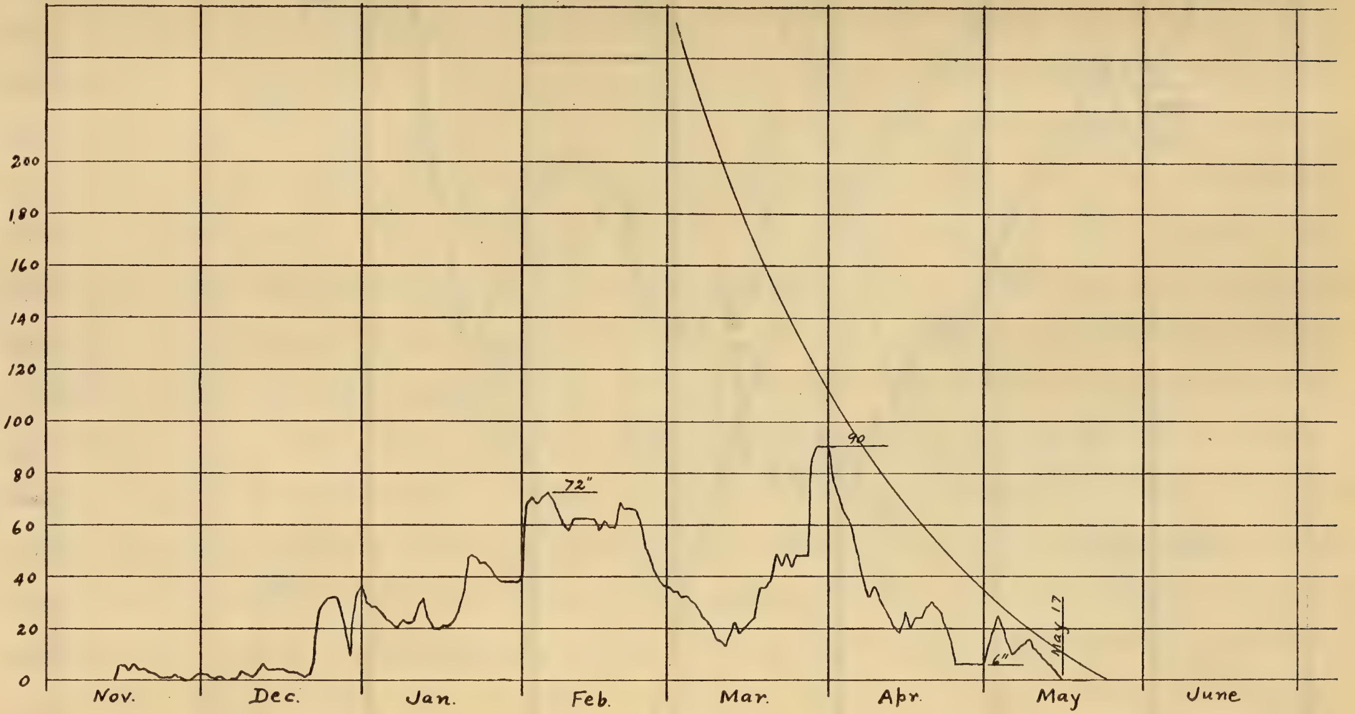
1902-1903.


200
180
160
140
120
100
80
60
40
20
0
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
62"
124"
132"
124"
36"
June 1
2"

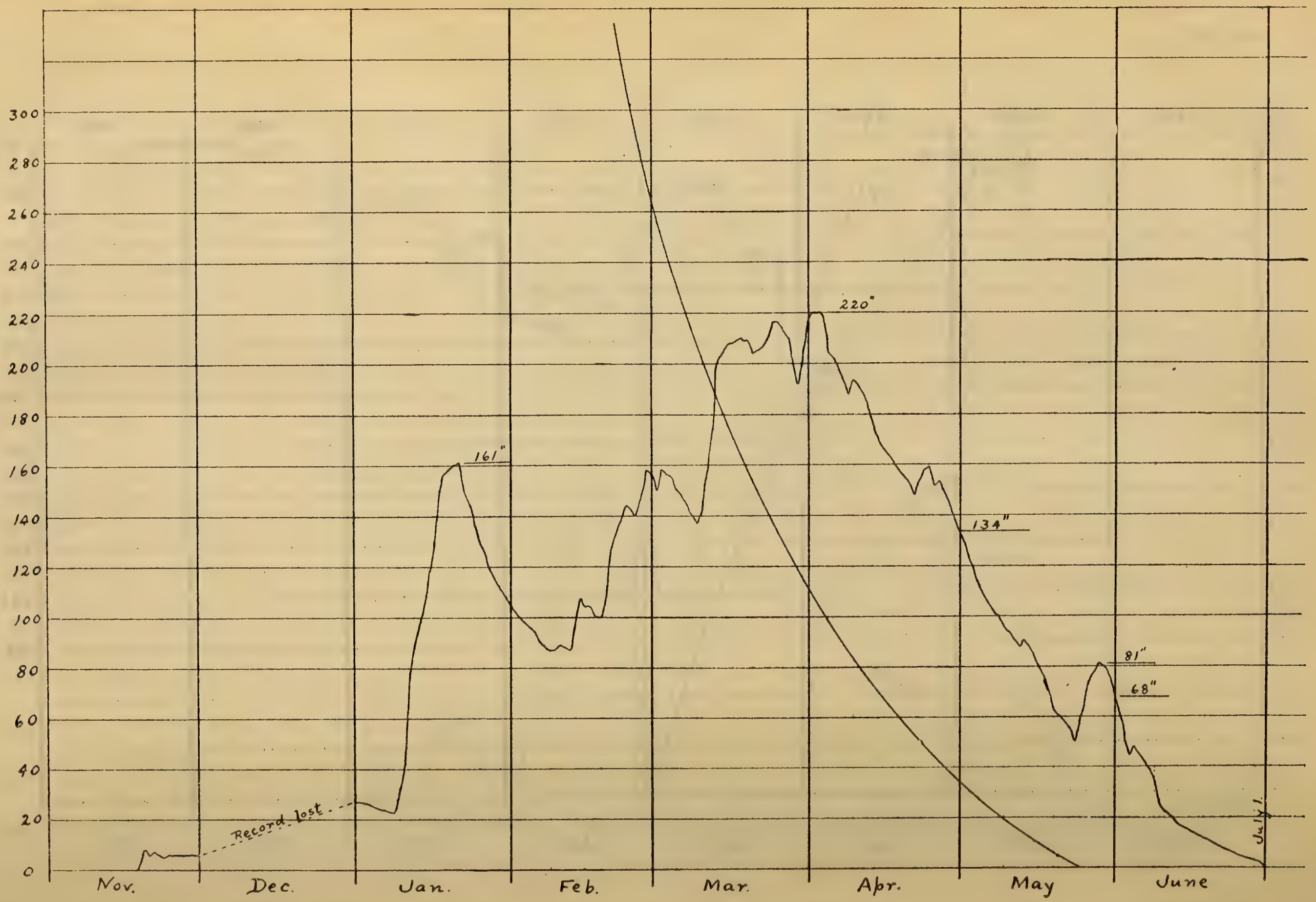
1903-1904.


200
180
160
140
120
100
80
60
40
20
0
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
41"
120"
170"
134"
106"
June 1

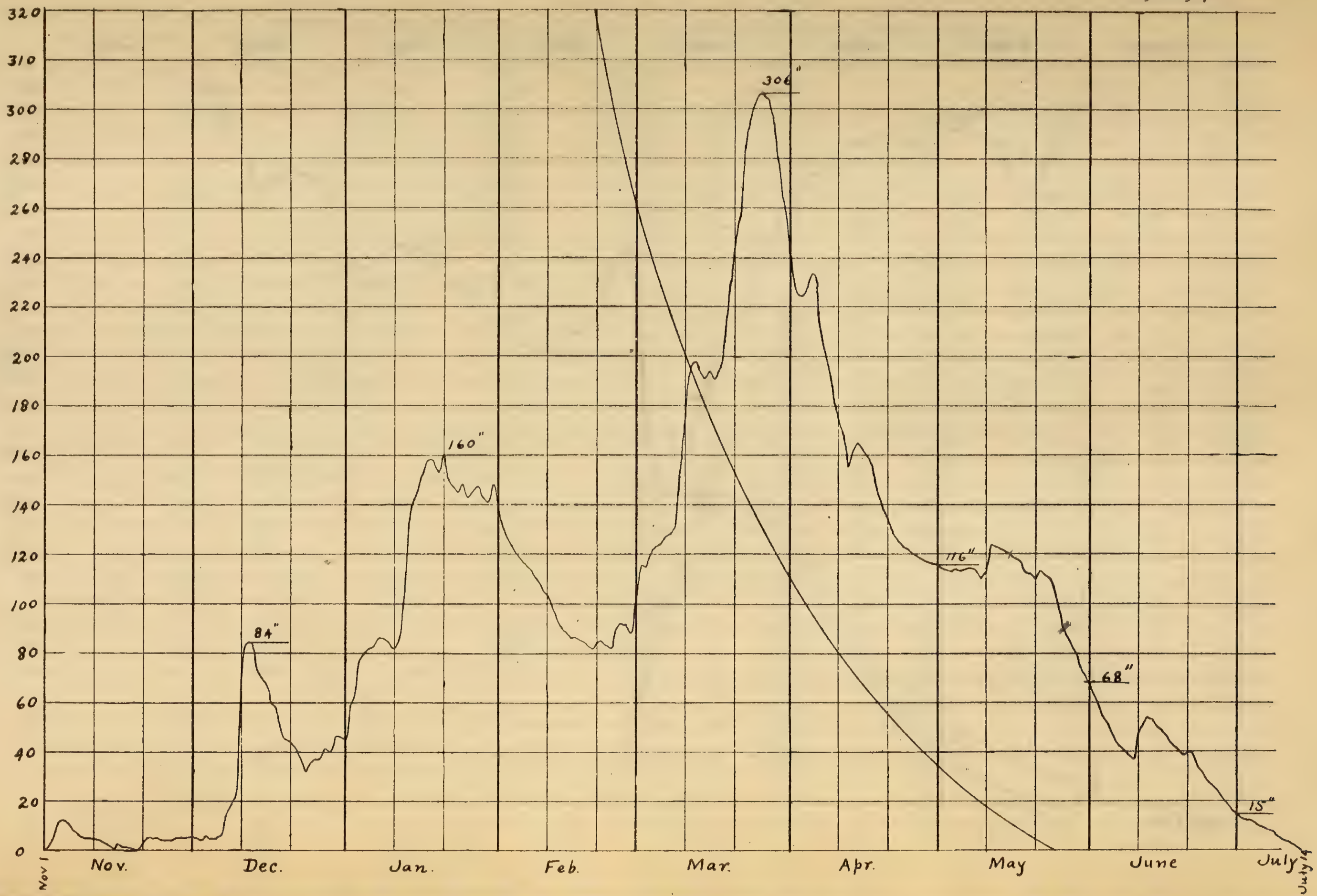
1904-1905.


200
180
160
140
120
100
80
60
40
20
0
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
72"
90
6"
May 17

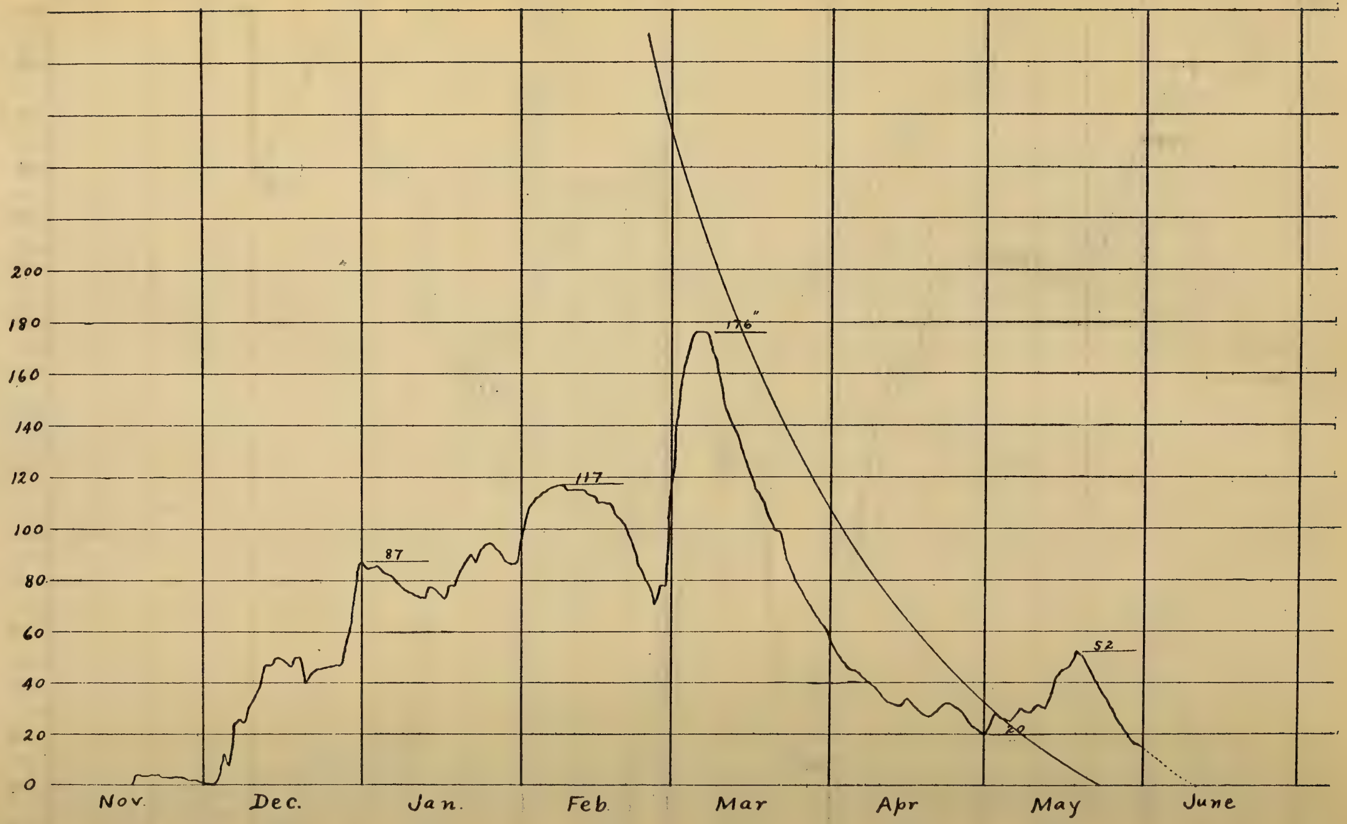
1905-1906.


300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
July 1.
Record lost
161"
220"
134"
81"
68"

1906-1907.

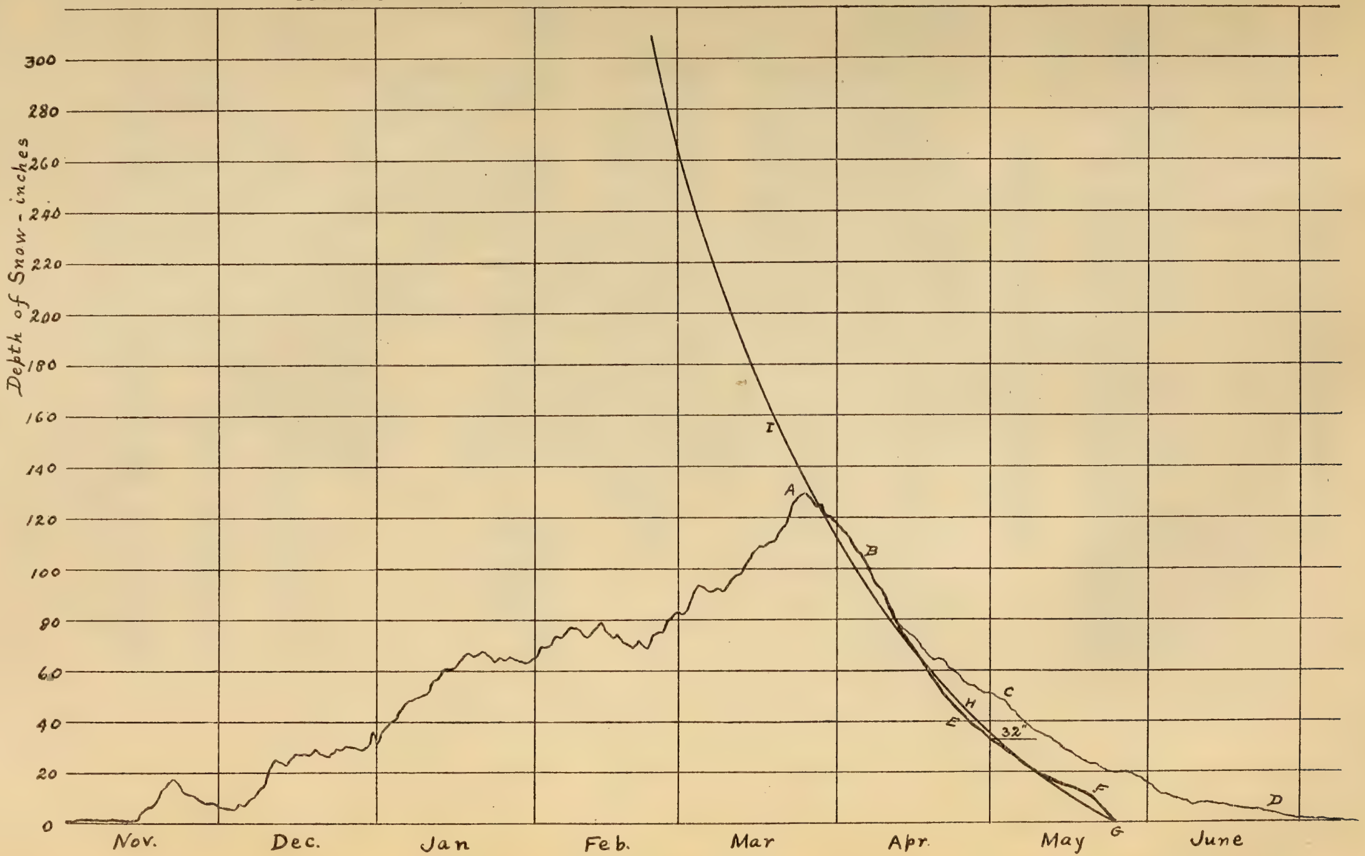

320
310
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Nov 1
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
July
July 14
84"
160"
306"
116"
68"
15"

1907-1908.



200
180
160
140
120
100
80
60
40
20
0
87
117
176"
52
20
Nov.
Dec.
Jan.
Feb.
Mar
Apr
May
June

CURVE OF MEAN DEPTH OF SNOW AT SUMMIT STATION, FROM 1898-1907.



SIERRA CLUB BULLETIN.

PUBLISHED JANUARY AND JUNE OF EACH YEAR.

Published for Members. Annual Dues, $3.00.

The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

ORGANIZATION FOR THE YEAR 1908-1909.

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Prof. J. N. Le Conte (Berkeley) .... *Treasurer*
Mr. Wm. E. Colby (Mills Building, S. F.) .... *Secretary*
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Prof. George Davidson (2221 Washington St., S. F.).
Prof. W. R. Dudley (Stanford University).
Mr. Warren Olney (Oakland).
Mr. Edward T. Parsons (University Club, S. F.).

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Prof. Wm. R. Dudley, Mr. F. E. Olmsted (U. S. Forest Service), Mr. G. B. Lull, State Forester... *Forestry Notes*
Mr. Alex. G. Eells.
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Mr. Edward T. Parsons.
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Mr. Willoughby Rodman (Los Angeles).
Prof. J. E. Church, Jr. (Reno, Nevada).

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Outing Committee—Mr. Wm. E. Colby (*Chairman*), Mr. J. N. Le Conte, Mr. Edward T. Parsons.

Committee on Local Walks—Mr. E. J. Mott (*Chairman*), Mr. Harold French, Mr. Wallace Hussey, Miss Lena Redington, Mr. G. R. Stewart.

Le Conte Memorial Lodge Committee—Mr. E. T. Parsons (*Chairman*), Prof. Wm. F. Badè, Prof. J. N. Le Conte.

Librarian—Miss Anita Gompertz.

REPORTS.

REPORT OF THE SECRETARY,

MAY 4, 1907 – MAY 2, 1908.

The names of the recently elected Board of Directors and of the officers selected by them are set forth on the opposite page.

There was a net gain of 98 members during the year. A total of 198 new members joined the Club and 100 were crossed from the list by reason of death, resignation, and non-payment of dues. At the end of the Club year, in May, the total membership was 1,002. This makes a most auspicious period in the Club's history, and is most convincing evidence that the Club is thoroughly alive and has good reasons for existence. With energetic work we should have 1,200 members by another year.

The balance in the Treasury is larger than ever before in the Club's history, but there are many heavy expenses to meet during the coming year, and it is fortunate that the Club is in so secure a financial position.

The Circular letters have already announced the opening of the new Club Room in the Mills Building, but it is well to keep this in mind, as the Club's library and photographs are once more available for the members.

The sum of $337.09 was raised for the re-furnishing fund for our new Club Room in the Mills Building, and has been expended as follows:—

Bookcases	$ 50 00
Desk, typewriter, and chair	75 00
Table	37 00
Filing system (cards, letters, maps, etc.)	83 25
Linoleum	39 10
Binding Club BULLETINS, *Appalachia*, etc.	52 74
Total expended	$337 09

The Club is in receipt of the following gifts, and expresses its sincere thanks to the donors:—

One hundred dollars from James Mills, to be used in purchasing furniture for the Le Conte Lodge in Yosemite; a very rare and large panoramic photograph of San Francisco, taken in 1877, a set of Indian photographs and Powell's report on the Grand Cañon of the Colorado, from Mrs. N. T. Smith; a set of "Picturesque California," from John Muir; a wonderful enlarged photograph of Mt. Olympus, from Asahel Curtis; two copies of "Wild Flowers of California," from Miss Margaret Buck; certain numbers of the *Appalachia* necessary to complete a second set to be placed in the Le Conte Lodge, from the Appalachian Mountain Club; and a splendid collection of photographs taken in Muir Woods, from William Kent.

The members of the Club will be pleased to know that in recognition of Mr. Kent's noble gift of Muir Woods to the Federal Government, to be devoted to park purposes, the Board of Directors has elected him an honorary member.

The Outing to the Kern Cañon, Mt. Whitney, and Giant Forest this summer gives every promise of being as successful and delightful as any yet undertaken. Members of the party will explore for a possible pass for a trail from the headwaters of the Kern-Kaweah to the headwaters of Roaring River, in Cloudy Cañon. This will make possible a much more direct route to Mt. Whitney from either the Kings River Cañon or Giant Forest.

While on the Outing, members of the party will, under express permit of the State Fish Commission, catch and transplant a number of golden trout to streams that are now devoid of fish life. Special cans for transporting the fish have been purchased and will be kept by the Club for future use.

With the splendid growth of the Club, many avenues for more effective work will be opened. We can do much toward stocking the countless streams and lakes in the High Sierra, which are now without fish. This will do much toward stimulating travel into the mountains.

We can commence the purchase of a collection of magnificent mountain photographs similar to the famous "Sella" collection of the Appalachian Mountain Club. This can be sent from place to place for exhibition and attract attention to our work, and the wonderful scenery of our own and other mountain ranges.

We can gradually accumulate a collection of lantern slides (all of our slides having been destroyed in the fire) and send these to various towns and cities, where our members can exhibit them and interest others in our work. We should have a strong working nucleus of members in every important city in the State.

The local walks about the bay have evoked considerable interest in the past. We hope to do more along this line in the future. Many attractive two- or three-day excursions can be made to nearby points. We will probably publish in the fall a small pamphlet which will be devoted to local walks. What we need are several energetic spirits to assist us in this work. The few willing ones cannot do it all.

Respectfully submitted,

May, 1908. Wm. E. Colby, *Secretary.*

The Board of Directors sent the following communication:—

May 2, 1908.

To the President of the United States and the Governors of the States Assembled in Conference.

Greeting: We, the undersigned, Directors and Officers of the Sierra Club, have been gratified to learn of the Conference of Governors called at the White House for the purpose of considering the Conservation of Natural Resources. Acting upon the conviction that this is a matter of utmost public concern, we wish to record, in connection with this Conference, our strong sense of the paramount value of scenic beauty among our natural resources. The moral and physical welfare of a nation is not dependent alone upon bread and water. Comprehending these primary necessities is the deeper need for recreation and that which satisfies also the esthetic sense. The establishment of gardens and parks is the immemorial expression of an ever present human desire. Our country has a wealth of natural beauty which is far beyond the power of human hands to create or restore, but not beyond their power to destroy. It is an untaxed heritage that may be had for the lifting one's eyes; whose influence upon the life of the nation, physically, morally, mentally, is inestimable, and whose preservation is the greatest service that one generation can render to another. Nor are we unmindful of the incalculable economic value of our scenic resources. Consular reports indicate that the stream of tourists attracted to Europe by its scenic, no less than its natural, beauty is worth $550,000,000 annually. America affords the newest, and in many respects the finest, of the world's natural pleasure-grounds. Tourists of wealth and fashion, as well as mountain climbers and lovers of outdoor life from all over the world are flocking in constantly increasing numbers to the Cordilleran system of mountaians on our Western Coast. Even from a purely economic point of view it would be extremely unwise to administer our scenic resources in such a way that comparatively private gain results in universal public loss. In taking this stand we express the sentiment of our membership of more than a thousand persons, who have subscribed not only to the purposes of the Sierra Club, "to explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains," but who follow with intelligent and appreciative interest every effort to secure to our and coming generations the benefit of our scenic resources.

Respectfuly yours,
John Muir,
A. G. McAdie,
J. N. Le Conte,
Wm. E. Colby,
Wm. F. Badè,
Geo. Davidson,
W. R. Dudley,
Warren Olney,
T. T. Parsons,
Board of Directors.

REPORT OF THE TREASURER,

May 4, 1907, to May 9, 1908.

To the Directors of the Sierra Club.

Gentlemen: I beg to submit the following report of the finances of the Sierra Club for the year ending May 9, 1908:—

GENERAL FUND.

Receipts.

Cash on hand May 4, 1907		$1,075 27
Cash received from Wm. E. Colby, Secretary—		
Dues	$2,762 00	
Advertisements (June, 1907, and January, 1908, Bulletins)	565 00	
Rent of club-room	10 00	
Sale of Bulletins	7 98	
Sale of club pins	14 00	
Refund of *Appalachian* postage advanced	123 10	3,482 08
Total cash received		$4,557 35

Expenditures.

Printing of BULLETINS Nos. 36 and 37	$1,361 21
Postage and stationery	618 95
Clerical work and typewriting, including four months' salary of regular attendant	432 25
Advertising expenses	166 26
Le Conte Memorial Lodge expenses (Yosemite)	119 65
Public lectures	66 25
Distributing of BULLETINS, etc.	64 10
Printing of circulars and notices	63 75
Additions to furniture in office	60 55
Rent of Room No. 302, Mills Building, two months	60 00
Purchase of club pins	34 60
Expressage, telegrams, and telephones	26 71
Accessions to the library	7 75
Walk advertisements in newspapers	4 10
Miscellaneous expenses	6 95
	$3,093 08
Cash on hand May 9, 1908	1,464 27
	$4,557 35

PERMANENT FUND.

(From Life Memberships.)

Balance on hand May 4, 1907	$357 45
Deposited since May 4, 1907	150 00
Interest accrued since May 4, 1907	12 17
Total on deposit in Security Savings Bank May 9, 1908	$519 62

Very respectfully,

J. N. LE CONTE,
Treasurer.

SAN FRANCISCO, CAL., May 9, 1908.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is Room 302 Mills Building, San Francisco, where all Club members are welcome, and where all the maps, photographs, and other records of the Club are kept.

The Club would like to secure additional copies of those numbers of the SIERRA CLUB BULLETIN *which are noted on the back of the cover of this number as being out of print, and we hope any member having extra copies will send them to the Secretary.*

DECISION OF THE SECRETARY OF THE INTERIOR.

The following is the decision of the Secretary of the Interior upon the application of the city of San Francisco for reservoir sites in the Hetch Hetchy Valley and at Lake Eleanor, Yosemite National Park:—

DEPARTMENT OF THE INTERIOR,
WASHINGTON, May 11, 1908.

Application for Lake Eleanor and Hetch Hetchy Valley Reservoir Sites. Act of February 15, 1901.	Water Supply, City of San Francisco.

The Commissioner of the General Land Office.

SIR: October 15, 1901, James D. Phelan, then Mayor of the city of San Francisco, filed application for reservoir rights of way within the Yosemite National Park upon what are known as the Lake Eleanor and Hetch Hetchy Valley reservoir sites. This application was made under the act of February 15, 1901, and was in fact the application of the city made in the name of James D. Phelan to avoid the difficulties which beset a city if it must announce its business intentions to the public before securing options and rights necessary for its project. This is not disputed, and the fact is corroborated by his assigning to the city and county of San Francisco, on February 20, 1903, all his rights under the above application.

This application was considered by the Secretary of the Interior and, on December 22, 1903, rejected, on the ground that he did not have the legal power to allow such a right of way within the Yosemite National Park. From that time to this the city has, with practical continuity, pressed its request for a permit to use these reservoir sites. The city failed, however, to take steps to reopen this case in the form prescribed by the Rules of Practice of this Department, and for that reason, technically had no application on file after December 22, 1903. On the other hand, the city's evident good faith and the strong evidence that it supposed its application was alive in the Department is shown by the fact that at its request and solicitation the question of the power of the Secretary of the Interior to grant the rights of way applied for was referred to the Attorney-General, who, on October 28, 1905, held definitely that the Secretary of the Interior had full discretionary power to grant rights of way for reservoir, irrigation, or hydro-electric purposes within the park.

When the Secretary's decision of December 22, 1903, was made final, the maps of location for the two reservoir sites were returned to the city, and unfortunately were destroyed by the fire which followed the earthquake of 1906. Fortunately, however, exact tracings of these maps had been made by the city engineer for use in court proceedings, and for that reason it has been possible to file exact reproductions of the original maps, certified by the city engineer. When the attention of the city's representative was called to the fact that technically the city had no application before the Department, he, on May 7, 1908, formally filed a petition requesting the Secretary of the Interior to exercise his supervisory authority and reopen the matter of the application of James D. Phelan for the reservoir rights in question, thus treating it as though it had never lapsed. I have given the most careful consideration to this petition, and have decided that the facts mentioned above are ample grounds for exercising my supervisory power, and therefore reinstate the application of James D. Phelan, assigned to the city, as though the case had been technically kept alive since December 22, 1903, by specific compliance with the Rules of Practice of the Department. To this end the tracings of the original maps of location as recertified by Marsden Manson, city engineer, on April 22, 1908, will be accepted in lieu of the original and treated accordingly.

Congress, on February 15, 1901, provided specifically:—

"The Secretary of the Interior . . . is authorized . . . to permit the use of rights of way through . . . the Yosemite, Sequoia, and General Grant National Parks, California, for . . . water conduits and for water plants, dams, and reservoirs used to promote . . . the supply of water for domestic, public, or other beneficial uses . . . provided that such permits shall be allowed within or through any of said parks . . . only upon the approval of the chief officer of the Department under whose supervision such park or reservation falls, and upon a finding by him that the same is not incompatible with the public interest."

By these words Congress has given power to the Secretary of the Interior to grant the rights applied for by the city of San Francisco if he finds that the permit "is not incompatible with the public interest." Therefore I need only consider the effect of granting the application upon "the public interest."

In construing the words of a statute the evident and ordinary meaning should be taken, when such meaning is reasonable and not repugnant to the evident purpose of the law itself. On this broad principle the words "the public interest" should not be confined merely to the public interest in the Yosemite National Park for use as a park only, but rather the broader public interest which requires these reservoir sites to be utilized for the highest good to the greatest number of people. If Congress had intended to restrict the meaning to the mere interest of the public in the park as such, it surely would have used specific words to show that intent. At the time the act was passed there was no authority of law for the granting of privileges of this character in the Yosemite National Park. Congress recognized the interest of the public in the utilization of the great water resources of the park and specifically gave power to the Secretary of the Interior to permit such use. The proviso was evidently added merely as a reminder that he should weigh well the public interest both in and out of the park before making his decision.

The present water supply of the city of San Francisco is both inadequate and unsatisfactory. This fact has been known for a number of years and has led to a very extensive consideration of the various possible sources of supply. The search for water for the city has been prosecuted from two diametrically opposite points of view. On the one side the water companies, interested in supplying the city with water for their own profit, have taken advantage of the long delay since it was first proposed to bring water from the Yosemite to San Francisco to look up and get control, so far as they could, of the available sources in order to sell them to the city. On the other hand both the National Government and the city of San Francisco have made careful study of the possible sources of supply for the city. Four or five years ago the Hydrographic Branch of the Geological Survey, after a careful examination by engineers of character and ability, reached the conclusion that the Tuolumne River offered a desirable and available supply for the city. The same conclusion was reached by the engineers of the city of San Francisco after years of exhaustive investigation.

I appreciate keenly the interest of the public in preserving the natural wonders of the park and am unwilling that the Hetch Hetchy Valley site should be developed until the needs of the city are greater than can be supplied from the Lake Eleanor site when developed to its full capacity. Domestic use, however, especially for a municipal supply, is the highest use to which water and available storage basins therefor can be put. Recognizing this, the city has expressed a willingness to regard the public interest in the Hetch Hetchy Valley and defer its use as long as possible.

The next great use of water and water resources is irrigation. There are in the San Joaquin Valley two large irrigation districts, the Turlock and Modesto, which have already appropriated under State law 2,350 second feet of the normal flow of water through Lake Eleanor and Hetch Hetchy. The representatives of these districts protested strongly against the granting of the permit to San Francisco, being fearful that the future complete development of these irrigation communities would be materially hampered by the city's use of water. After repeated conferences, however, with the representatives of these irrigation districts I believe their rights can be fully safeguarded, provided certain definite stipulations to protect the irrigators are entered into by the city. Fortunately the city can agree to this, and the interest of the two users will not conflict. On the contrary, the city in developing its water supply will, to a considerable extent, help the irrigation districts in their further development.

The only other source of objection, except that from persons and corporations who have no *rights* to protect, but merely the hope of financial gain if the application of the city is denied, comes from those who have a special interest in our National parks from the standpoint of scenic effects, natural wonders, and health and pleasure resort. I appreciate fully the feeling of these protestants and have considered their protests and arguments with great interest and sympathy. The use of these sites for reservoir purposes would interfere with the present condition of the park, and that consideration should be weighed carefully against the great use which the city can make of the permit. I am convinced, however, that the "public interest" will be much better conserved by granting the permit. Hetch Hetchy Valley is great and beautiful in its natural scenic effects. If it were also unique, sentiment for its preservation in an absolutely natural state would be far greater. In the near vicinity, however, much more accessible to the public and more wonderful and beautiful is the Yosemite Valley itself. Furthermore, the reservoir will not destroy Hetch Hetchy. It will scarcely affect the cañon walls. It will not reach the foot of the various falls which descend from the sides of the cañon. The prime change will be that instead of a beautiful but somewhat unusable "meadow" floor the valley will be a lake of rare beauty.

As against this partial loss to the scenic effect of the park, the advantages to the public from the change are many and great: The city of San Francisco and probably the other cities on San Francisco Bay would have one of the finest and purest water supplies in the world; the irrigable land in the Tuolumne and San Joaquin valleys would be helped out by the use of the excess stored water and by using the electric power not needed by the city for municipal purposes, to pump subterranean water for the irrigation of additional areas; the city would have a cheap and bountiful supply of electric energy for pumping its water supply and lighting the city and its municipal buildings; the public would have a highway at its disposal to reach this beautiful region of the park heretofore practically inaccessible; this road would be built and maintained by the city without expense to the Government or the general public; the city has options on land held in private ownership within the Yosemite National Park, and would purchase this land and make it available to the public for camping purposes; the settlers and entrymen who acquired this land naturally chose the finest localities, and at present have power to exclude the public from the best camping-places; and, further, the city in protecting its water supply would furnish to the public a patrol to save this part of the park from destructive and disfiguring forest fires.

The floor of Hetch Hetchy Valley, part of which is owned privately and used as a cattle ranch, would become a lake bordered by vertical granite walls or steep banks of broken granite. Therefore, when the water is drawn very low it will leave few muddy edges exposed. This lake, however, would be practically full during the greater part of the tourist season in each year, and there would be practically no difficulty in making trails and roads for the use of the tourists around the edges of the valley above high-water mark. The city of San Francisco, through its regularly authorized representative, has, in order to protect the interests most directly involved, agreed to file with the Secretary of the Interior a stipulation approved by specific resolution of the Board of Supervisors and duly executed under the seal of the city of San Francisco, as follows:

> 1. The city of San Francisco practically owns all the patented land in the floor of the Hetch Hetchy reservoir site and sufficient adjacent areas in the Yosemite National Park and the Sierra National Forest to equal the remainder of that reservoir area. The city will surrender to the United States equivalent areas outside of the reservoir sites and within the national park and adjacent reserves in exchange for the remaining land in the reservoir sites, for which authority from Congress will be obtained, if necessary.
>
> 2. The city and county of San Francisco distinctly understands and agrees that all the rules and regulations for the government of the park, now or hereafter in force, shall be applicable to its holdings within the park, and that, except to the extent that the necessary use of its holding for the exclusive purpose of storing and protecting water for the uses herein specified will be interfered with, the public may have the full enjoyment thereof, under regulations fixed by the Secretary of the Interior.
>
> 3. The city and county of San Francisco will develop the Lake Eleanor site to its full capacity before beginning the development of the Hetch Hetchy site, and the development of the later will be begun only when the needs of the city and county of San Francisco, and adjacent cities which may join with it in obtaining a common water supply, may require such further development. As the drainage area tributary to Lake Eleanor will not yield, under the conditions herein imposed, sufficient run-off in dry years to replenish the reservoir, a diverting dam and canal from Cherry Creek to Lake Eleanor reservoir for the conduct of waste flood or extra-seasonal waters to said reservoir is essential for the development of the site to its full capacity, and will be constructed if permission is given by the Secretary of the Interior.
>
> 4. The city and county of San Francisco, and any other city or cities which may, with the approval of the municipal authorities, join with said city and county of San Francisco in obtaining a common water supply, will not interfere in the slightest particular with the right of the Modesto Irrigation District and the Turlock Irrigation District to use the natural flow of the Tuolumne River and its branches to the full extent of their claims, as follows: Turlock Irrigation District, 1,500 second-feet; Modesto Irrigation District, 850 second-feet; these districts having respectively appropriated the foregoing amounts of water under the laws of the State of California.
>
> To the end that these rights may be fully protected, San Francisco will stipulate not to store, nor cause to be stored, divert, nor cause to be diverted from the Tuolumne River or any of its branches, any of the natural flow of said river when desired for use by said districts for any beneficial pur-

pose, unless this natural flow of the river and tributaries above La Grange dam be in excess of the actual capacities of the canals of said districts, even when they shall have been brought up to the full volumes named, 1,500 second-feet for the Turlock Irrigation District and 850 second-feet for the Modesto Irrigation District.

5. The city and county of San Francisco will in no way interfere with the storage of flood waters, in sites other than Hetch Hetchy and Lake Eleanor by the Modesto and Turlock Irrigation Districts, or either of said districts, for use in said districts, and will return to the Tuolumne River above La Grange dam, for the use of said irrigation districts, all surplus or waste flow of the river which may be used for power.

6. The city of San Francisco will, upon request, sell to said Modesto and Turlock Irrigation Districts, for the use of any landowner or owners therein, for pumping subsurface water for drainage or irrigation, any excess of electric power which may be generated, such as may not be used for the water supply herein provided and for the actual municipal purposes of the city and county of San Francisco (which purposes shall not include sale to private persons nor to corporations), at such price as will actually reimburse the said city and county for developing and transmitting the surplus electrical energy thus sold, the price, in case of dispute, to be fixed by the Secretary of the Interior; and no power plant shall be interposed on the line of flow except by the said city and county, except for the purposes and under the limitations above set forth.

7. The city and county of San Francisco will agree that the Secretary of the Interior shall, at his discretion or when called upon by either the city or the districts to do so, direct the apportionment and measurement of the water in accordance with the terms of the preceding clauses of this stipulation.

8. The city and county of San Francisco, when it begins the development of the Hetch Hetchy site, will undertake and vigorously prosecute to completion a dam at least 150 feet high, with a foundation capable of supporting the dam when built to its greatest economic and safe height, and whenever, in the opinion of the engineer in charge of the reservoirs on behalf of said city and county and of the municipalities sharing in this supply, the volume of water on storage in the reservoirs herein applied for is in excess of the seasonal requirements of said municipalities, and that it is safe to do so, that such excess will be liberated at such times and in such amounts as said districts may designate, at a price to said districts not to exceed the proportionate cost of storage and sinking fund chargeable to the volumes thus liberated, the price, in case of dispute, to be fixed by the Secretary of the Interior; provided that no prescriptive or other right shall ever inure or attach to said districts by user or otherwise to the water thus liberated.

9. The city and county of San Francisco will, within two years after the grant by the Secretary of the Interior of the

> rights hereby applied for, submit the question of said water supply to the vote of its citizens as required by its charter, and within three years thereafter, if such vote be affirmative, will commence the actual construction of the Lake Eleanor dam, and will carry the same to completion with all reasonable diligence, so that said reservoir may be completed within five years after the commencement thereof, unless such times hereinbefore specified shall be extended by the Secretary of the Interior for cause shown by the city, or the construction delayed by litigation; and unless the construction of said reservoir is authorized by a vote of the city and county and said work is commenced, carried on, and completed within the times herein specified, all rights granted hereunder shall revert to the Government.

In considering the reinstated application of the city of San Francisco I do not need to pass upon the claim that this is the only practical and reasonable source of water supply for the city. It is sufficient that after careful and competent study the officials of the city insist that such is the case. By granting the application opportunity will be given for the city, by obtaining the necessary two-thirds majority vote, to demonstrate the practical question as to whether or not this is the water supply desired and needed by the residents of San Francisco.

I therefore approve the maps of location for the Lake Eleanor and Hetch Hetchy reservoir sites as filed by James D. Phelan and assigned to the city of San Francisco, subject to the filing by the city of the formal stipulations set forth above, and the fulfillment of the conditions therein contained.

Very respectfully,
JAMES RUDOLPH GARFIELD,
Secretary.

It will be of interest to our many friends who stood by us in this fight for the preservation of some of the grandest natural scenery in the Sierra to learn from the foregoing decision that San Francisco must first develop and use the Lake Eleanor portion of the system to the limit of its capacity. It has been estimated that the Lake Eleanor supply when fully developed is capable of furnishing 60,000,000 gallons of water daily. This, in addition to San Francisco's present supply, will meet all her requirements for more than a quarter of a century in all probability, and meanwhile Hetch Hetchy Valley will be untouched.

Before the Lake Eleanor supply can be utilized, San Francisco must vote on the question of the acquisition of this system and determine whether she wishes to issue bonds for the $40,000,000 or $50,000,000 which it has been estimated the plant will cost when completed.

In deciding this question it will be well for the city to keep in mind the fact that approximately five hundred square miles of the Tuolumne watershed, or fully one half of the entire area of the Yosemite National Park, drain directly into the proposed

Lake Eleanor and Hetch Hetchy reservoir sites. The travel into this portion of the park is constantly increasing, and by the time the Hetch Hetchy site is available, it will number many thousands annually. This travel into the watershed will have the effect of seriously polluting the water supply and will compel the city to resort to filtration. The question at once arises as to whether, in view of the fact that the city's water will ultimately have to be filtered anyway, it would not be better policy to secure our water nearer at hand to begin with, at less cost, and filter it to the requisite purity.

The Hetch Hetchy pipe-line will necessarily cross the San Joaquin River many miles from its intake. Why not pump the water directly from this point? It will eliminate many miles of expensive pipe-line and all the great cost of storage sites and dams. This water is unlimited in quantity and will be as free of conflicting rights as any water in California, because it will be taken below a point where it can be used for irrigation. It can then be filtered to any degree of purity, and the cost of filtration will be so little compared to the saving accomplished as to be insignificant in amount.

Apropos of this subject the following extracts from a letter written to Mr. Muir by J. Horace McFarland, President of the American Civic Association, will be of interest:—

> "My feeling is that before this [Hetch Hetchy] grant can possibly be availed of a wider knowledge of the way in which a municipality may properly arrange a water supply for a future great population will intervene to negative the whole project. So far as the American Civic Association can bring it about, directly and through its intimate affiliation with the powerful National Municipal League, there will be an endeavor to spread the essential gospel that no self-respecting community caring for the health of its present and future citizens can afford to provide a water supply not efficiently filtered close to the time of use. This principle has already been recognized in New York City. Statistics which were presented to the Conference in Washington last week, but not discussed, show conclusively that filtration is the only safety, unless a city is so fortunate as to have access to an underground supply of water of proved purity. This does not disprove the general dictum, because the underground supply is naturally filtered as efficiently as if artificially filtered.
>
> "I suggest, therefore, that agitation be at once begun upon the matter of filtration of the San Francisco water supply. Attention can be called to the fact that if filtration is accepted as a necessity the supply itself need not be of complete purity. I have been drinking every day for two and a half years filtered Susquehanna River water, crystal clear and sparkling, free from injurious organisms, which twenty-four hours previous to the time of drinking was culm-infested, filth-filled, and full of disease

organisms. I see every time I go to the filtration plant the sullen, turbid flood of a river which more than a half-million people have used as a sewer, and I see the delightful results of scientific and carefully guarded filtration under which at one cent a hundred gallons we get a result quite equal to Apollinaris at twenty-five cents a pint.

"If there can be strong attention called to this condition, if there can be reference to the governmental authorities at Washington who have a splendid presentation to make, such a change may come about as to make it most unlikely that San Francisco will attempt the vast expense of the Hetch Hetchy project with the prospect of a cheaper and far more efficient supply closer by."

BOOK REVIEWS.

EDITED BY WILLIAM FREDERIC BADÈ.

"HETCH-HETCHY VALLEY AND THE TUOLUMNE CAÑON."

A very readable article on the "Hetch-Hetchy Valley and the Tuolumne Cañon," by Dr. Wm. Frederic Badè, appeared in the May 14, 1908, issue of *The Independent*, published in New York City. A few quotations will not be out of place:—

"The application of the city of San Francisco to the Department of the Interior for permission to use Hetch-Hetchy Valley as a reservoir site raises issues of considerable consequence. Since this valley is part of the Yosemite National Park it becomes necessary to determine upon what ground the claims or needs of a municipality may prevene those of the nation. Engineers conversant with the situation do not regard the Tuolumne as the city's only adequate source of supply. The promoters of the project emphasize the convenience of the site. On the other hand, Hetch-Hetchy Valley is one of the chief scenic assets of the National Park. Many competent judges, among them John Muir, rank its scenic importance scarcely second to Yosemite Valley itself. The gray granite walls rise, in what are mostly sheer precipices, to heights varying from 1,700 to 2,300 feet. On the northern wall hangs the long silver scarf of Tueeulala—a thousand feet of white water dashed into whiter spray upon an earthquake talus. A little to the eastward the greater fall, Wapama, with thunderous roar, plunges into the valley from a height of 1,700 feet. No one who has seen Hetch-Hetchy with its ancient groves of oak and pine, its wonderful waterfalls, its meadows riotous with bloom and deeply set in granite frames, can feel happy over a project that would turn this valley into a lake bottom."

The writer then describes his trip down the Tuolumne Cañon, "that deserves to be counted among the greatest natural wonders on earth," and concludes with this beautiful word-picture:—

"The evening light was weaving strange tapestries over the western mountain walls as we passed through the portals of Hetch-Hetchy, next to Yosemite the greatest natural cathedral on the Pacific Coast. From richly carved choir galleries came the joyous music of many waters, and the deep organ tones of full-throated waterfalls pealed forth ever and anon as we threaded its aisles on subsequent days. One would suppose that its own sublime beauty were argument sufficient for the preservation of the valley. But still more cogent reasons for its preservation are found in the fact that it is the natural entrance or exit of the Tuolumne Cañon. The time is not far distant when the Government will wish to build a trail through the wonderland of this gorge in order that thousands may look upon and enjoy what until now few human eyes have seen. But men will long consider before tunneling granite cliffs above a reservoir. If Hetch-Hetchy is dammed the cañon trail is doomed, and the people of this nation are deprived at one blow of two of their best sources of future enjoyment and recreation." W. E. C.

"MOUNTAIN CLIMBING AS A SPORT."

A paper by George D. Abraham, in the June, 1908, *World's Work,* is well worth the consideration of our mountaineering members. While the rules enumerated therein apply particularly to the Alpine regions of Europe and the North, still many of the points made hold good in our more hospitable Sierra Nevada.

Especially noteworthy and true are his remarks on footwear. Many of our members, trusting to the glib, but ignorant, if not dishonest shoe salesman, when outfitting for their first trip to the mountains, have subsequently found that so-called Elkhide soles are worthless in the mountains; for only honest oak-tanned soles, without water-proofing of any kind, will hold nails and withstand the granite of the Sierra for a month.

This paper on mountaineering is particularly timely, and *World's Work* is to be commended for making it so widely available. E. T. P.

"TO THE TOP OF THE CONTINENT."

This is the picturesque title of Dr. Frederick A. Cook's account of the ascent of Mt. McKinley. As the publisher's advertisement states it, the book is "An adventurous tale of a perilous trip up rushing glacial streams in a motor boat; of moose, caribou, mountain sheep, and bear; of frosty days and gloomy nights; and of the final conquering of the highest peak on this continent, Mt. McKinley, 20,390 feet high."

The introduction makes an immediate appeal to such as are members of the free-masonry of mountaineers. We cannot do better than to quote the words of the author:—

> "Mountaineering as we assume it in this venture is a department of exploration, and as such it is worthy of a higher appreciation than that usually accorded it. . . . [It] is too often put down as a kind of dare-devil sport, of risky feats on cloud-piercing pinnacles; but in climbing there is an inspiration expanding with the increase of vision."

This twofold interest attaches to the whole story; the love of exploration and actual discovery, and the rapture of the enlarged vision; the instinct of the geographer, and the sensibility of the artist. To all who have ever stood

"Silent upon a peak in Darien"

this book addresses itself.

The story is in two parts,—the first, an account of the failure to make the ascent in 1903, and the second the narrative of the ultimate success in 1906. As Dr. Cook details the difficulties of the approach to Mt. McKinley during the first expedition, our appreciation of the magnitude of the undertaking increases. The peculiar feature of a walking trip in that land of glaciers and swamps is that traveling is largely aquatic. In the author's own phrase, such mountaineering is "Amphibious climbing." Certain it is that men and horses were tried to the limit of endurance by their inequality with the innumerable glacial rivers. Dr. Cook's enthusiasm is the indispensable factor in this struggle with the wilderness. This enthusiasm speaks in the vividness with which the author pictures his experiences, in the forward rush and sweep of the narrative, in the style which has the carrying power of a glacial river, swift, compelling, and, we must confess, too often turgid. Without this enthusiasm no one would have faced a second time the difficulties of the ascent. And we find Dr. Cook entering upon the second expedition with the spirit of conquest. He takes us a second time into the realm of the Norse gods, and he shows us how indomitable courage triumphed, and two men succeeded in making the ascent in defiance of the whole hierarchy of frost and fire. It seems fitting that the first ascent of Mt. McKinley should have been made by Americans.

Typographically the work is pleasing. The listing of maps with numerous more or less important illustrations is a mistake, as one may very easily overlook the indispensable map of the McKinley region until he has read the first half of the book.

Four appendices, containing maps showing the distribution of minerals, timber, and game, and the railway routes, and other information concerning Alaska, add to the value of the volume.

M. J. C.

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* *To the Top of the Continent;* Discovery, Exploration, and Adventure in Sub-Arctic Alaska. By Frederick A. Cook. M. D. Doubleday, Page & Company, New York. Pp. 321. $2.50 net.

YO-HO! YO-HO!

Yo-ho! Yo-ho!
When in the east with red aglow
The morning breaks o'er Dana's crest,
The camp awakes fresh from its rest
And hears the call it joys to know,
Yo-ho! Yo-ho!

Yo-ho! Yo-ho!
Where beetling cliffs their shadows throw
O'er Lake Merced, where mountain wall
Sends back the cry, floats on the call
In early dawn, in ev'ning glow,
Yo-ho! Yo-ho!

Yo-ho! Yo-ho!
Where stretch unbroken fields of snow,
Where Ritter's walls abruptly rise
To tow'ring crags that kiss the skies,
We hear the call, now loud, now low,
Yo-ho! Yo-ho!

Yo-ho! Yo-ho!
Where mad Toul'mne's waters flow
Through yawning gorge, and find a way
Down dizzy steeps in mist and spray,
Echoes the call, above, below,
Yo-ho! Yo-ho!

FRANCIS M. FULTZ.

July, 1907.

FORESTRY NOTES.

EDITED BY PROFESSOR WILLIAM R. DUDLEY.

NEED OF TRAINED FORESTERS. Increase in the area of the National Forests—formerly known as Forest Reserves—has taken tremendous strides in the two years now past. Indeed the amount has practically doubled, and would cover, if made continuous, an extent of territory equal to the six New England States, the four old Middle States, Maryland, the Virginias, and North Carolina, or about 200,000,000 acres. January 1, 1907, the area was over 127,000,000 acres, and Chief Forester Pinchot, in an address showing the advance in the organization and utility of the National Forests since they were placed under the control of the Forest Service, made the following remarks:—

> "We have now, as you know, 127,000,000 acres in forest reserves. All this is but a drop in the bucket compared with the total forest area of the United States, and but a small part of the forest which must be preserved if the results of forest preservation are to be achieved. We are doing pretty well with the Western mountains, but those Western mountains will not supply the National need. That must be done by the States and by private individuals, who will hold and manage their forests on scientific principles. Even in this comparatively small forest area, which the National Government holds, our forces are ridiculously inadequate. We have now, in the middle of winter, about six hundred forest rangers and about ninety forest supervisors; that is to say, a force of about seven hundred men for an area which, if it were managed as it would be managed in Prussia,—taking Prussia as an illustration,—and we were to have as many men on our forest reserves as they would have in Prussia, we would have something over 15,000 forest supervisors and something over 117,000 forest guards. We have about two hundred trained foresters to do the work which would be done in Prussia by 15,000. If we were to add a hundred men a year to our present force, and each man appointed lived and worked to the end, it would take about a hundred and fifty years to get our reserves manned in the Prussian way. We realize that unless the forest schools can begin to turn out the trained foresters we need, we shall be unable to meet the rapidly increasing demands for men in the forest reserves to handle them properly. The only reason we can do it now is because the demand for products of the reserves is comparatively small."

Naturally the need of recruits for the forest service is very much greater now than it was eighteen months ago. A man cannot serve his country better than by faithful work in this field.

CONCESSIONS IN THE NATIONAL FORESTS.

It is now nearly ten years since the SIERRA CLUB BULLETIN urged the reservation of all the public domain in California that included the sources of our streams useful for water supply. This was done in the interest of small land-holders and of municipalities as against the anticipated investments of great syndicates. The United States Forester approved this plan, and, fortunately, although not quite soon enough, through him and President Roosevelt, National forests have been created over most of the desired area. The efforts of the aforesaid moneyed interests to secure concessions of the natural resources in these forested mountain regions appears at the present time to be greatest on the part of the electric-power companies. The Sierra Club has desired the great natural resources in the mountains of California to remain permanently under Federal control, that the expected use of them might be restricted to proper limits and always devoted to the greatest benefit to the greatest number, a condition apparently impossible when they have passed to private control. The Club's interest in forest preservation and the natural features and resources of the mountains has been broader naturally than that of the technical forester. The attitude of the Government, therefore, in regard to the privileges sought for in the National forests by these powerful corporations is one of the greatest interest. President Roosevelt in a short speech quoted in many publications, but to be found in "Forestry and Irrigation" (Vol. 14, p. 354), went to the heart of this matter. The keynote of his remarks is found in the following:—

> " My position has been simply that where a privilege which may be of untold value in the future to the private individuals granted it is asked for from the Federal Government, the Federal Government shall put on the grant a condition that it shall not be a grant in perpetuity."

This speech was made at the Governors' Conference, May 13th to 15th. The idea of calling this conference to consider the conservation of our natural resources originated, the President says, with Gifford Pinchot. Where, since the Civil War, can we find from a Government official a more statesman-like suggestion?

SHALL THE STATE REGULATE DEFORESTATION?

In Mr. Pinchot's first conference with the redwood lumbermen of California—in 1899 we believe—one of the millmen expressed a regret that there was no law in California regulating and restraining, under certain circumstances, the cutting of trees on private lands. We have always regarded this—a common practice in Europe—as a desirable thing in America and only a logical consequence of the act of Congress under which the great irrigation dams have been constructed, conserving the waters of large drainage basins, the land in which was in part owned by private parties. The Forest Service has recently sent out a synopsis of an opinion handed down by the Supreme Court of Maine, "holding that the legislature of the State has a constitutional right to pass laws regulating the cutting of timber on private lands, if the cutting is liable to be detrimental to the public welfare." It was also stated "that there was nothing in the Constitution of the United States prohibiting the enforcement of a forest law of that kind."

NEW NAMES FOR NATIONAL FORESTS.

In order to give smaller administrative units and shorter and more convenient names a general system of re-districting of the National forests took effect on July 1st. The National forests of California are now: Klamath, Trinity, California (Stony Creek), Shasta, Modoc (Modoc and Warner Mountains), Plumas (Plumas and Diamond Mountain), Lassen (Lassen Peak), Tahoe, Mono (created), Stanislaus, Sierra (Sierra North), Inyo (Inyo and Sierra East), Sequoia (Sierra South), Monterey (Monterey, Pinnacles and San Benito), San Luis (San Luis Obispo), Santa Barbara, Angeles (San Bernardino and San Gabriel), Cleveland (San Jacinto and Trabuco Cañon).

EXTENSION OF THE HOMESTEAD LAW.

On May 30, 1908, an amendment was passed extending the Act of June 11, 1906, which provides for the settlement and listing of tracts of agricultural land included within National forests, to apply in all counties of the State of California, with the exception of Santa Barbara and San Luis Obispo.

PUBLICATIONS OF THE SIERRA CLUB

No. 1.—Articles of Association, By-Laws, and List of Members.

Nos. 4 and 5.—Maps of Portions of the Sierra Nevada adjacent to the Yosemite and to King's River, 1893.

No. 8.—Table of Elevations within the Pacific Coast, 1895, by Mark B. Kerr and R. H. Chapman.

No. 12.—Map of the Sierra Region, May, 1896.

Nos. 2, 3, 6, 7, 9, 10, 11, 13, together forming Volume I., Nos. 1-8, of the SIERRA CLUB BULLETIN.

Contents of Volume I.—Ascent of Mt. Le Conte; Address on Sierra Forest Reservation; California Outing; Crater Lake, Oregon; Diamond Hitch; Explorations North of Tuolumne River; Forest Reservations; From Fresno to Mt. Whitney, via Roaring River; From Gentry's to El Capitan and Yosemite Falls; Grand Cañon of the Tuolumne; Head-Waters of King's River; Kern and King's River Divide; King's River and Mt. Whitney Trails; Knapsack Tours in the Sierra; Mt. Bernard; Mt. Tahoma; Mt. Whitney Trail; New Grove of Sequoia Gigantea; Notes on the Pine Ridge Trail; Route up Mt. Williamson; Search for a Route from the Yosemite to the King's River Cañon; Sources of the San Joaquin; Three Days with Mt. King; Through Death Valley; Through the Tuolumne Cañon; Tramp to Mt. Lyell; Upper Sacramento in October; Notes, Correspondence, and Reports.

Nos. 14, 15, 16, 17, 18, and 19, together forming Volume II., Nos. 1-6, of the SIERRA CLUB BULLETIN.

Contents of Volume II.—Ascent of the White Mountains of New Mexico; Basin of the South Fork of the San Joaquin River; Conifers of the Pacific Slope, Parts I and II; Day with Mt. Tacoma; Early Summer Excursion to the Tuolumne Cañon and Mt. Lyell; Expedition of Prince Luigi Amedeo of Savoy to Mt. St. Elias; Explorations of the East Creek Amphitheater, from Mt. Rose to Mt. Shasta and Lower Buttes; Kaweah Group; Lava Region of Northern California; Mountain Trips: What to Take and How to Take It; Neglected Region of the Sierra; Observations on the Denudation of Vegetation—Suggested Remedy for California; On Mt. Lefroy August 3, 1896; On Mt. Lefroy August 3, 1897; Philip Stanley Abbot; Taking of Mt. Balfour; To Tehipite Valley from the King's River Grand Cañon; Up and Down Bubb's Creek; Wanderings in the High Sierra Between Mt. King and Mt. Williamson,—Parts I and II; Woman's Trip Through the Tuolumne Cañon; Yosemite Discovery; Notes, Correspondence, and Reports.

No. 20.—Volume III., No. 1, pp. 1 to 118—price $1.00.—Ramblings Through the High Sierra (Reprinted from "A Journal of Ramblings," privately printed in 1875); Editorial Notice; Ouzel Basin; Forestry Notes.

No. 21.—Ramblings Through the High Sierra. Same as No. 20. (Specially bound; without Editorial Notes, etc.)

No. 22.—Volume III., No. 2, pp. 119 to 188.—Lake Tahoe in Winter; Ascent of "El Yunque"; Another Paradise; King's River Cañon Trail Notes; Ascent of "Matterhorn Peak"; Reports; Notes and Correspondence; Forestry Notes.

No. 23.—Volume III., No. 3, pp. 189 to 270.—Parks and Peaks in Colorado; The Work of the Division of Forestry in the Redwoods; The Mazamas on Mt. Jefferson; Wagon-Trips to the Sierra; The Big Basin; The Re-Afforesting of the Sierra Nevada; The Descent of Tenaya Cañon; An Ascent of Cathedral Peak; A Glimpse of the Winter Sierra; Notes and Correspondence; Forestry Notes.

No. 24.—Volume III., No. 4, pp. 271 to 339.—The Mazamas on Mt. Rainier; Lassen Buttes: From Prattville to Fall River Mills; Zonal Distribution of Trees and Shrubs in the Southern Sierra; Mt. Washington in Winter; Round About Mt. Dana; Notes and Correspondence; Forestry Notes; Reports.

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All of above are out of print, having been destroyed in the fire of April 18, 1906.

No. 35.—Vol. VI., No. 2, pp. 75 to 152.—An Ascent of the Matterhorn; The Name "Mt. Rainier"; The Second King's River Outing; The Motion of the Nisqually Glacier, Mt. Rainier; Report on the King's River Cañon and Vicinity; Reports; Notes and Correspondence; Book Reviews; Forestry Notes; Revised By-Laws of the Sierra Club.

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No. 37.—Vol. VI., No. 4, pp. 211 to 284.—The Hetch-Hetchy Valley; To Joseph Le Conte, a Poem; Lake Ramparts; The Grand Cañons of the Tuolumne and the Merced; The Water-Ouzel, a Poem; Photograph of the Water-Ouzel; Bird Life of Yosemite Park; An Easterner's Impressions of a Sierra Club Outing; Indian Pictographs in Pate Valley; Reports; Notes and Correspondence; Book Reviews; Forestry Notes.

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